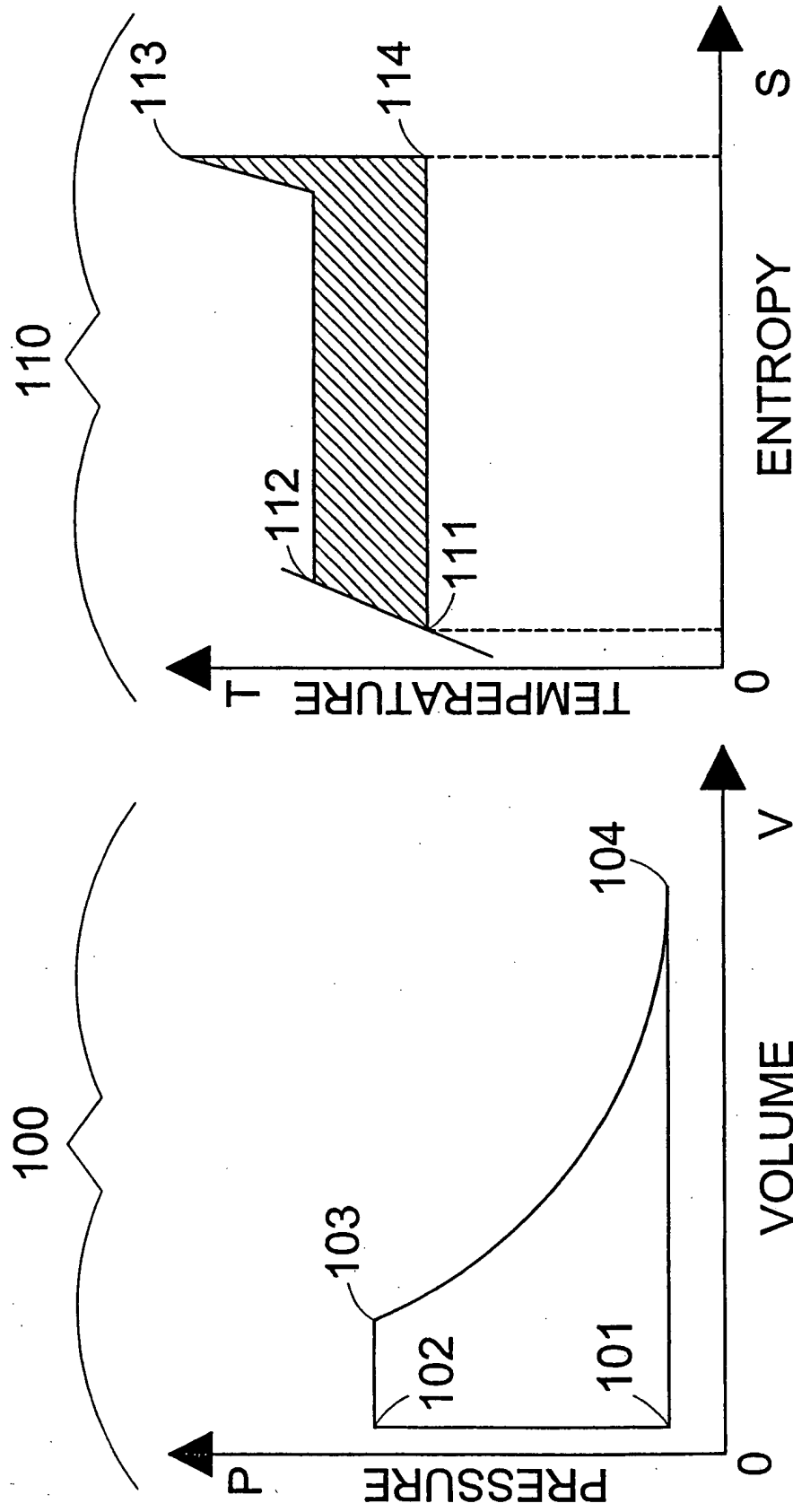
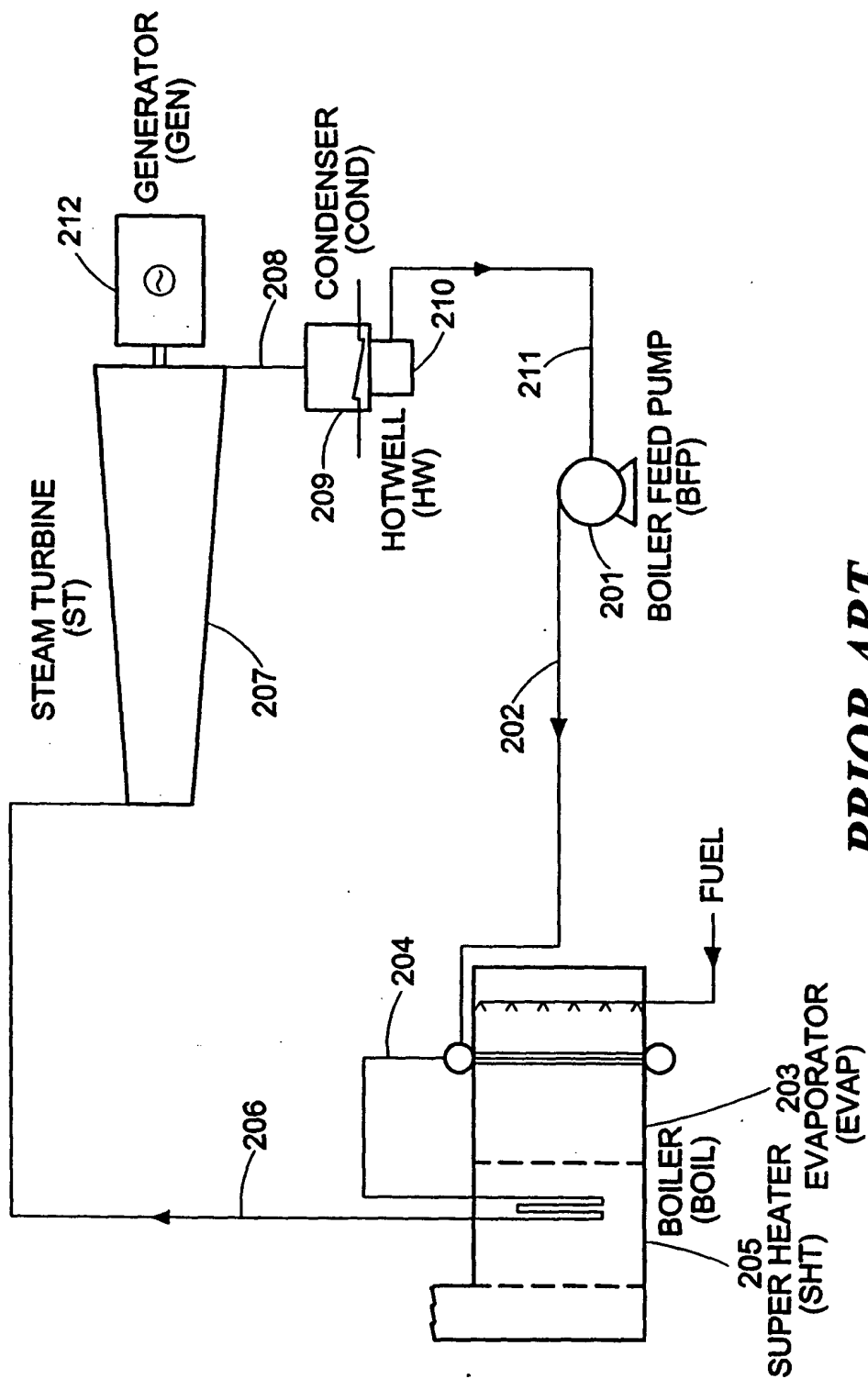


FIG. 1



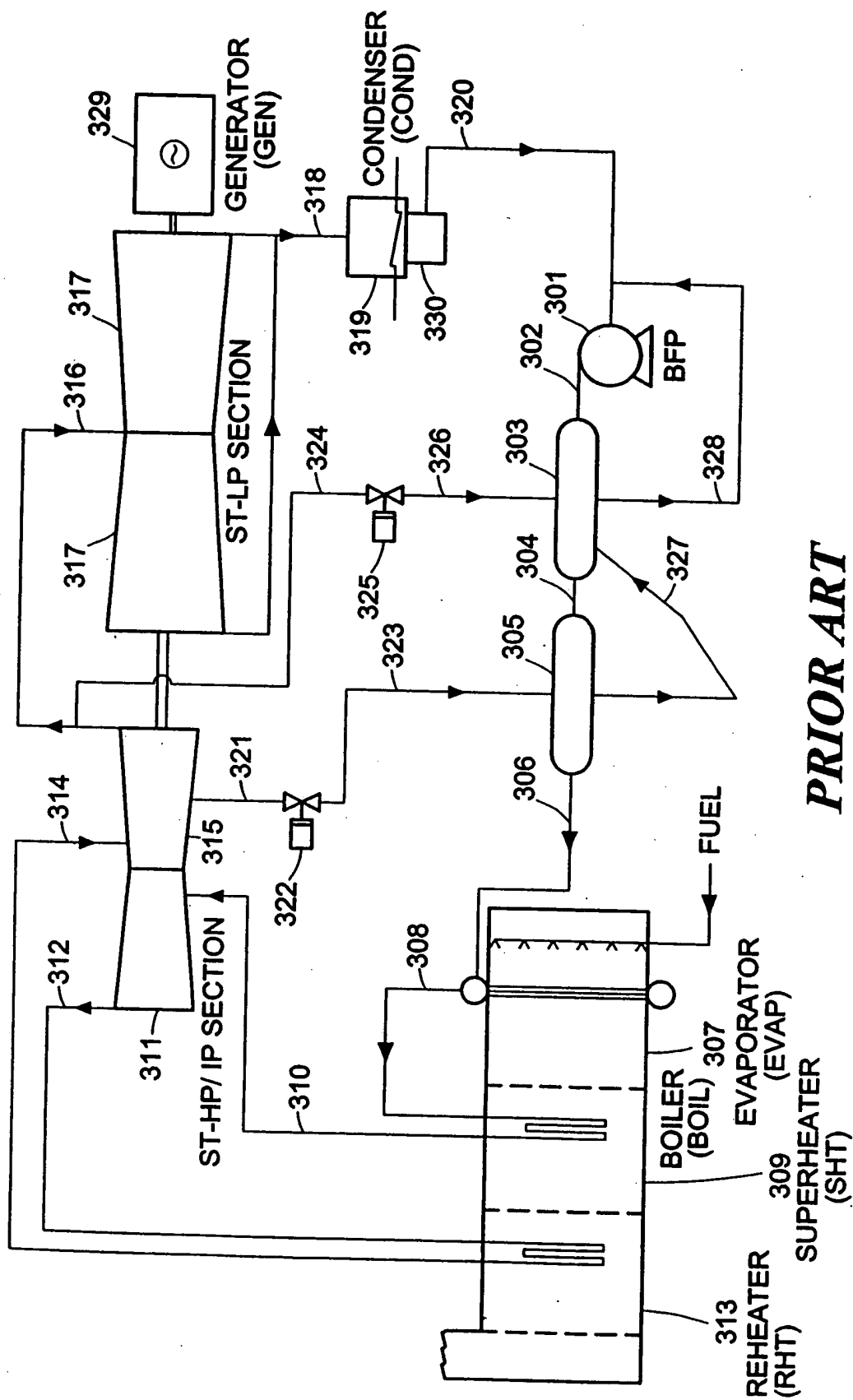
PRIOR ART

FIG. 2



PRIOR ART

FIG. 3



PRIOR ART

FIG. 4

Rankine Cycle Comparison

Option	Description	Inlet Press psia	Inlet Temp Degrees F	Reheat Press psia	Reheat Temp Degrees F	Exhaust Pressure psia	First Extract Flow %	Second Extract Flow %	Output BTU/ lbm	Input BTU/ lbm	Efficiency %	Efficiency Improvement %
1	Simple, No Reheat, No FWH	1800	1050	N/A	N/A	0.5894	N/A	N/A	586.7	1458.5	40.23%	Base
2	Reheat, No FWH	1800	1050	480.0	1050	0.5894	N/A	N/A	692.3	1642.4	42.15%	4.79%
3	Reheat, No FWH, Higher Press	2400	1050	640.0	1050	0.5894	N/A	N/A	701.0	1633.9	42.90%	6.65%
4	Reheat, With FWH	1800	1050	480.0	1050	0.5894	21.76	8.11	550.9	1257.1	43.82%	8.93%
5	Reheat, With FWH, Higher Pressure	2400	1050	640.0	1050	0.5894	24.81	7.95	539.1	1214.3	44.39%	10.35%
6	Supercritical, Double Reheat, No FWH	3860	1070	1029.0	1112	0.5894	N/A	N/A	850.5	1866.0	45.58%	13.30%
7	Supercritical, Double Reheat, With FWH	3860	1070	1029.0	1112	0.5894	8.72	14.12	731.8	1564.4	46.78%	16.28%

FIG. 5

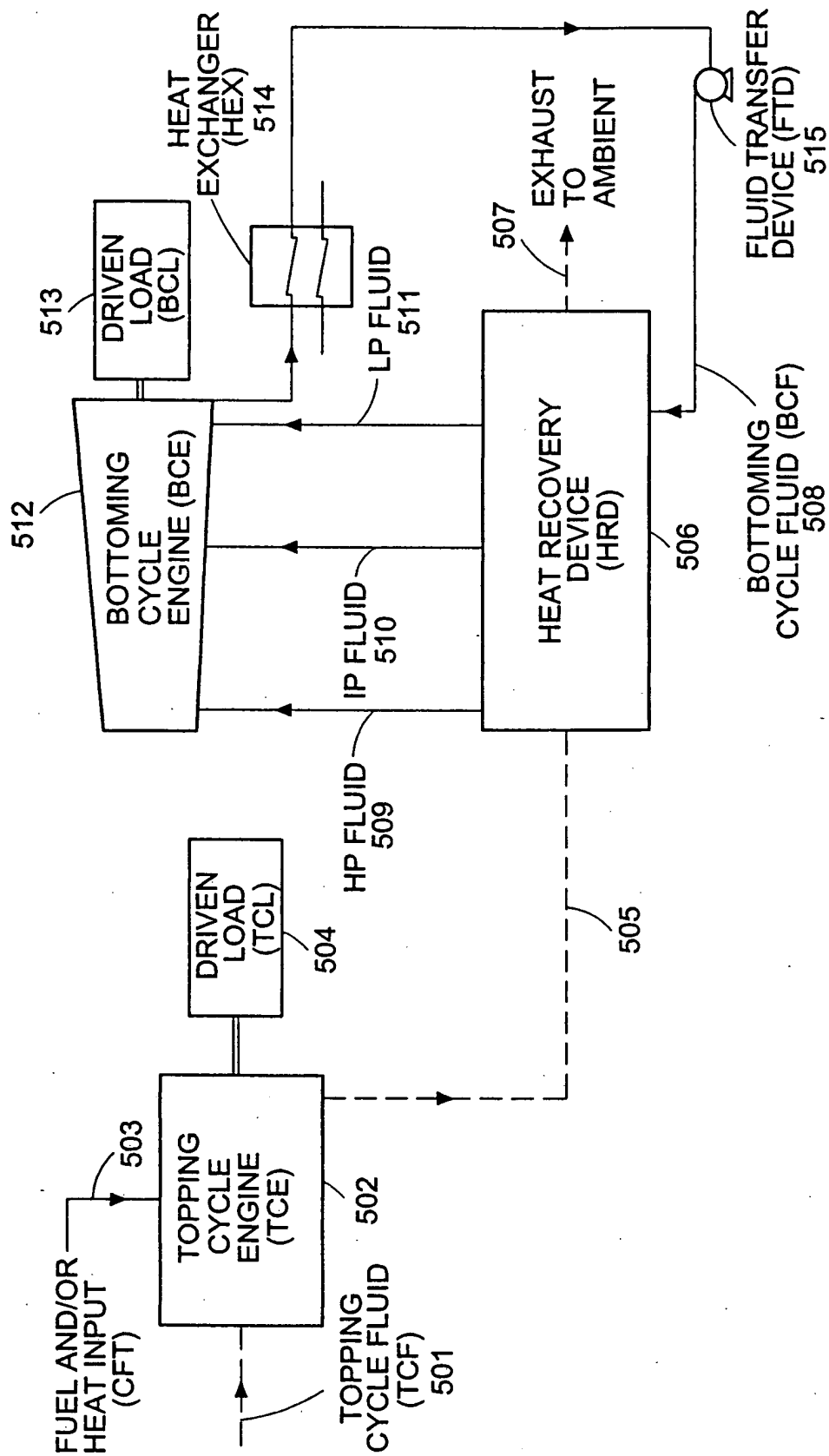


FIG. 6

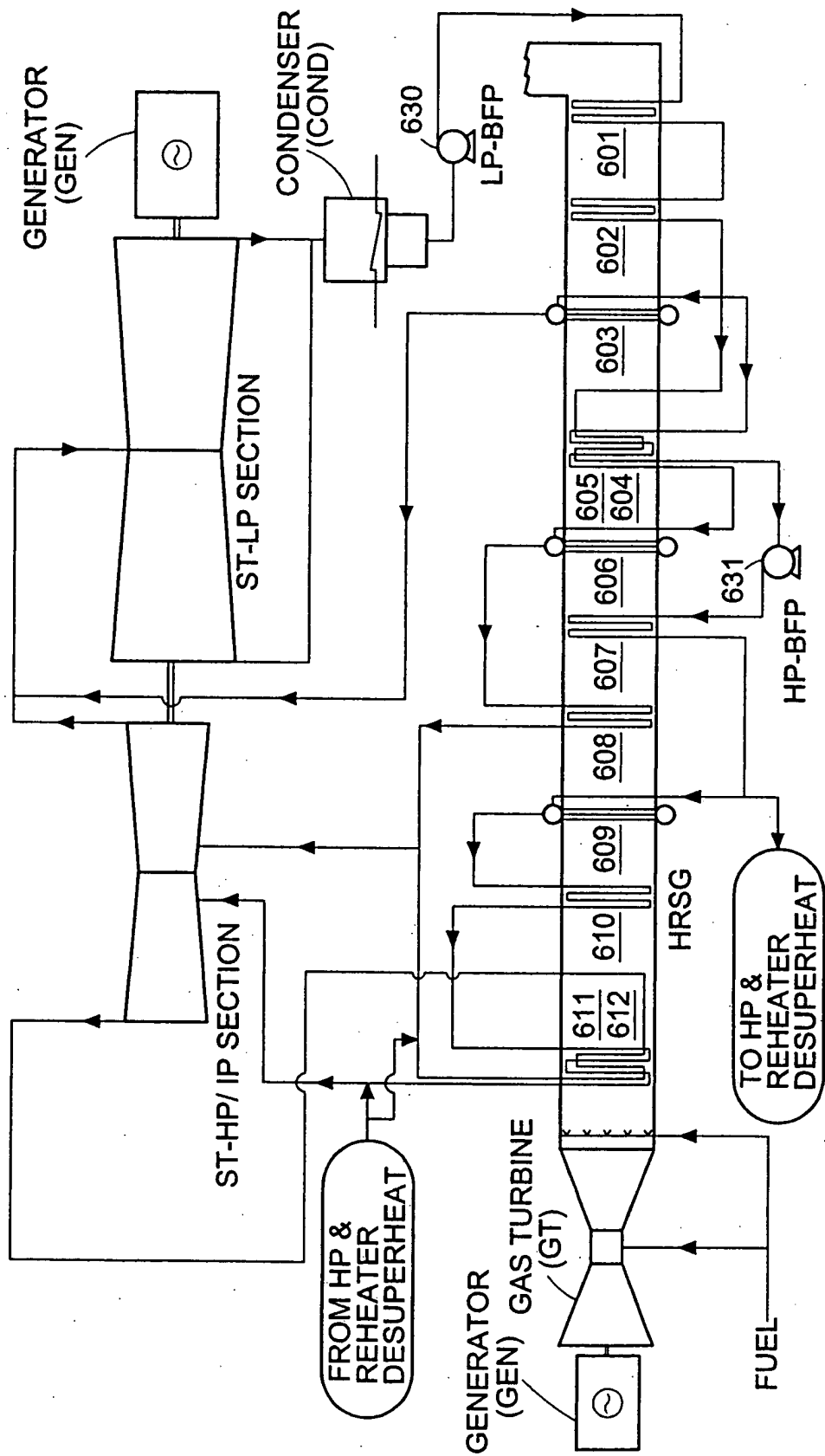


FIG. 7

Industry Standard GE Model PG7241FA GT Power Curve

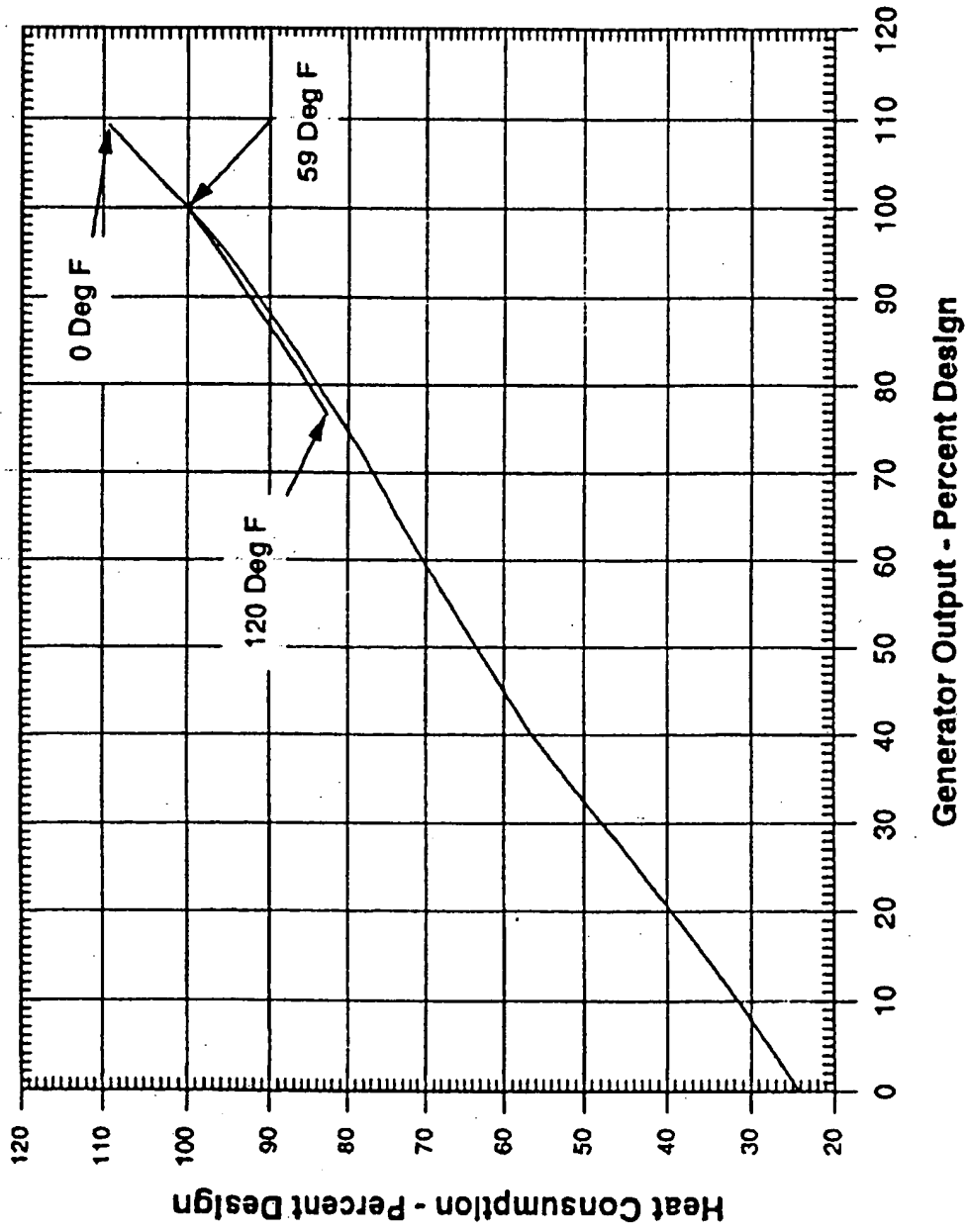


FIG. 8

GE S207 COMBINED CYCLE HEAT RATE VS. PLANT OUTPUT

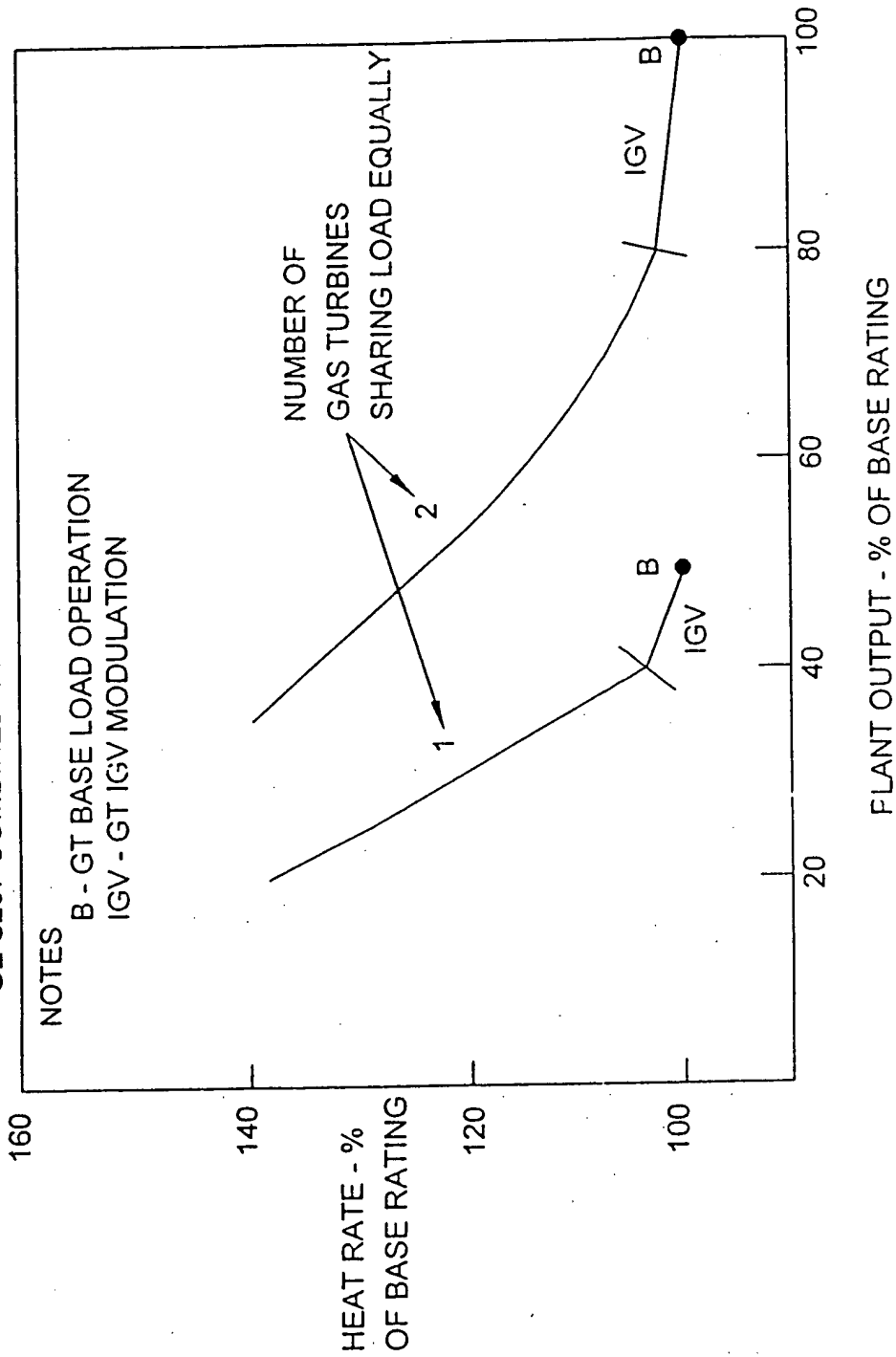


FIG. 9

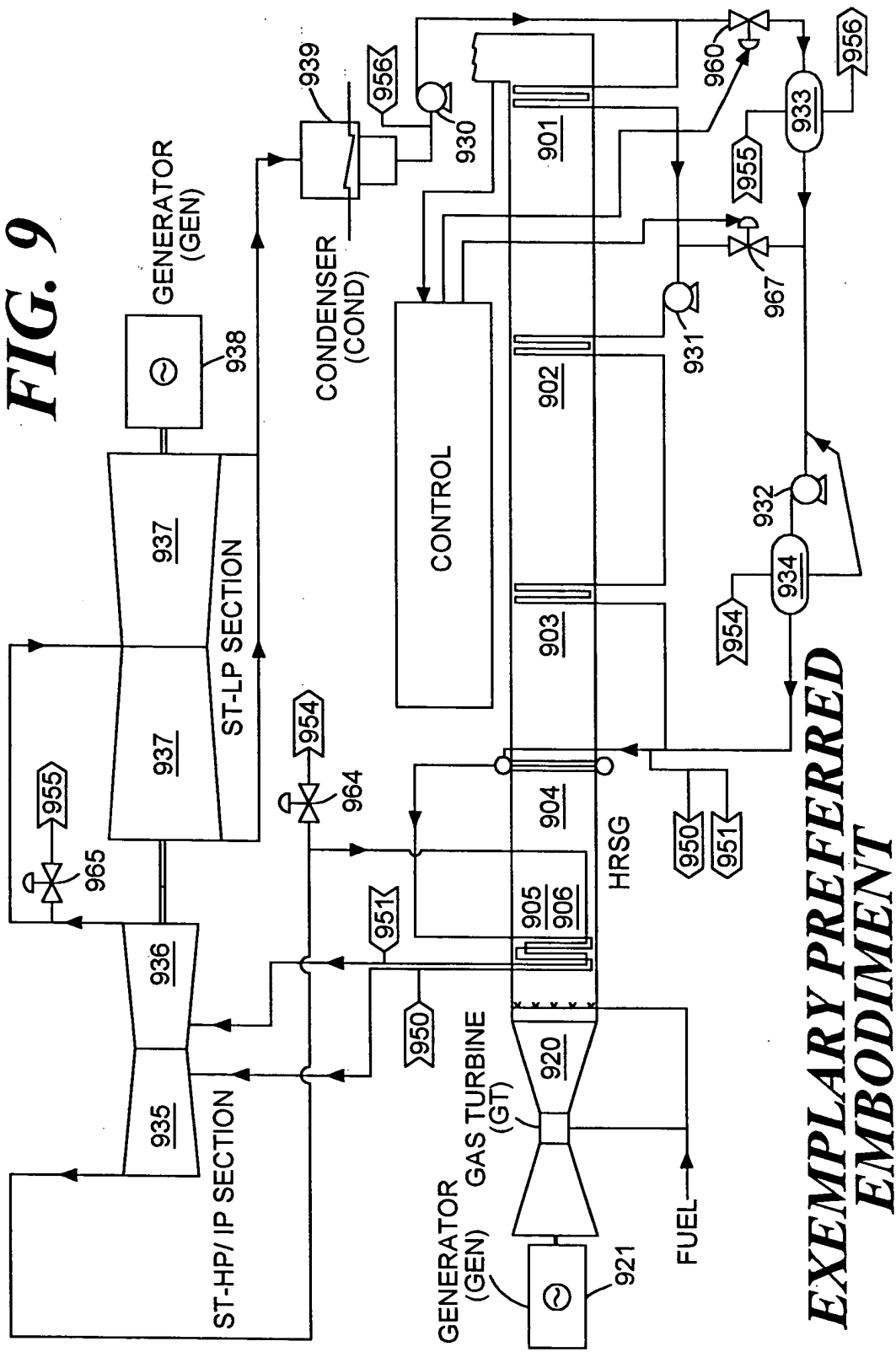


FIG. 10

Energy Flow Analysis Comparison

Option	GT Output (GTO) % of GTI	GT Loss (GTL) % of GTI	Supp Fire (SFE) % of GTI	HRSG Input (HGI) % of GTI	Exh Loss (HGE) % of GTI	HRSGL (HGL) % of GTI	HRSG Stm (HGS) % of GTI	SC Eff (SCE) %	Aux (AXF) Factor	STG Eff (1-SGL) %	ST Out (STO) % of GTI	Plant Eff (CCE) %	HR-LHV (PHR) BTU/kW
Prior Art	32.31%	11.48%	0.00%	56.21%	6.04%	0.50%	49.67%	38.78%	97.50%	99.00%	18.59%	50.90%	6040
Example	32.31%	11.48%	31.78%	87.99%	6.04%	0.82%	81.13%	44.39%	97.50%	99.00%	34.76%	50.90%	6041
SuperCrit	32.31%	11.48%	42.48%	98.69%	6.04%	0.93%	91.72%	46.78%	97.50%	99.00%	41.42%	51.75%	5942

Symbol	Description
GTI	GT Input Energy
GTO	GT Generator Electrical Output
GTL	GT Losses for heat, auxiliaries, generator efficiency
SFE	Energy added through supplemental firing
HGI	GT exhaust energy at inlet to HRSG
HGE	Energy exhausted to atmosphere at HRSG outlet
HGL	HRSG heat loss to ambient
HGS	Energy in HRSG transferred to steam
SCE	Steam cycle basic efficiency
AXF	Factor to account for auxiliary loads in steam cycle
SGL	Steam Turbine generator losses
STO	Steam turbine generator electrical output
CCE	Combined Cycle plant efficiency
PHR	Overall plant heat rate base on LHV of natural gas

FIG. 11

Steam Enthalpy (1800 psia)

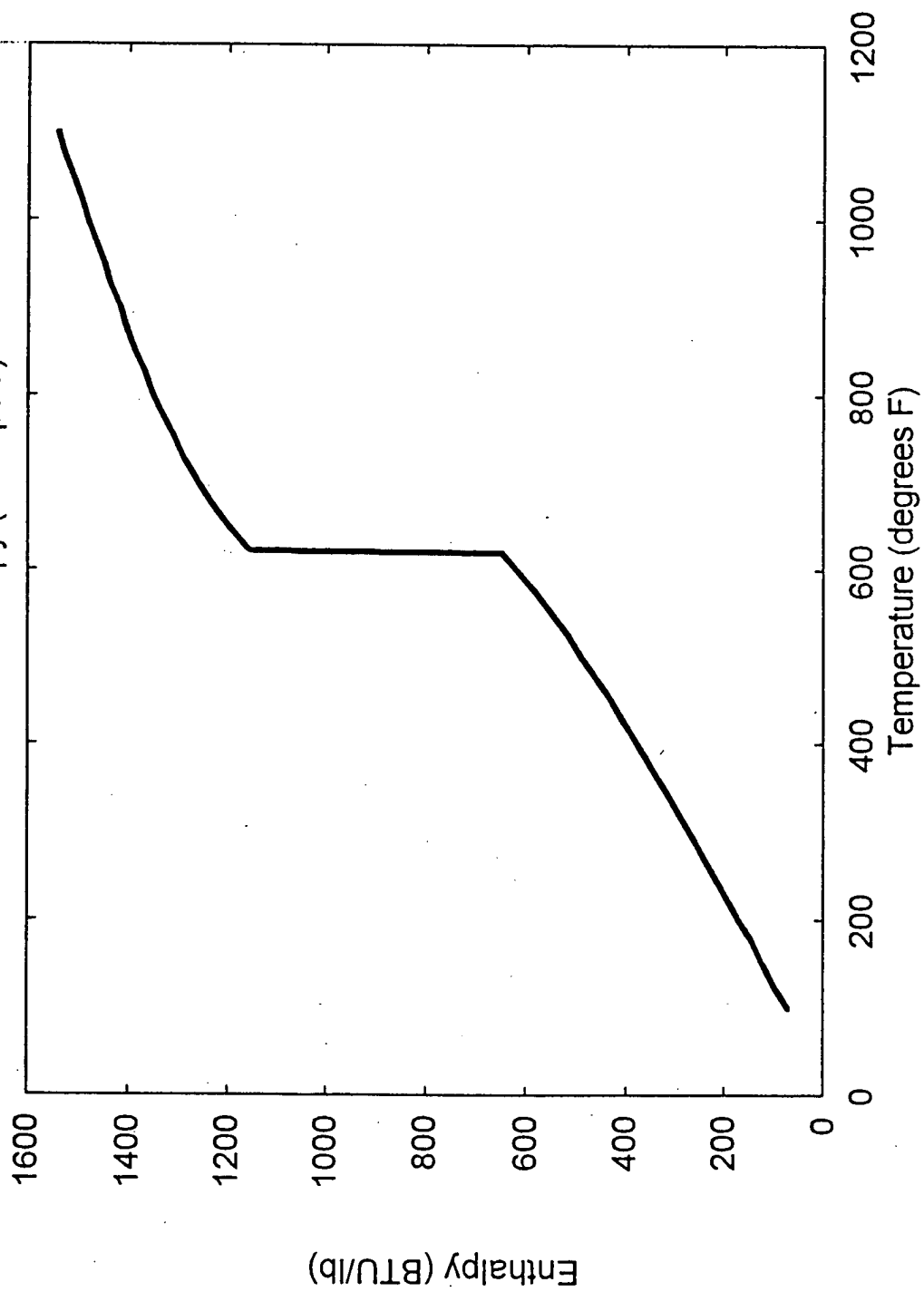


FIG. 12

Gas Turbine (GT) Exhaust Gas Enthalpy

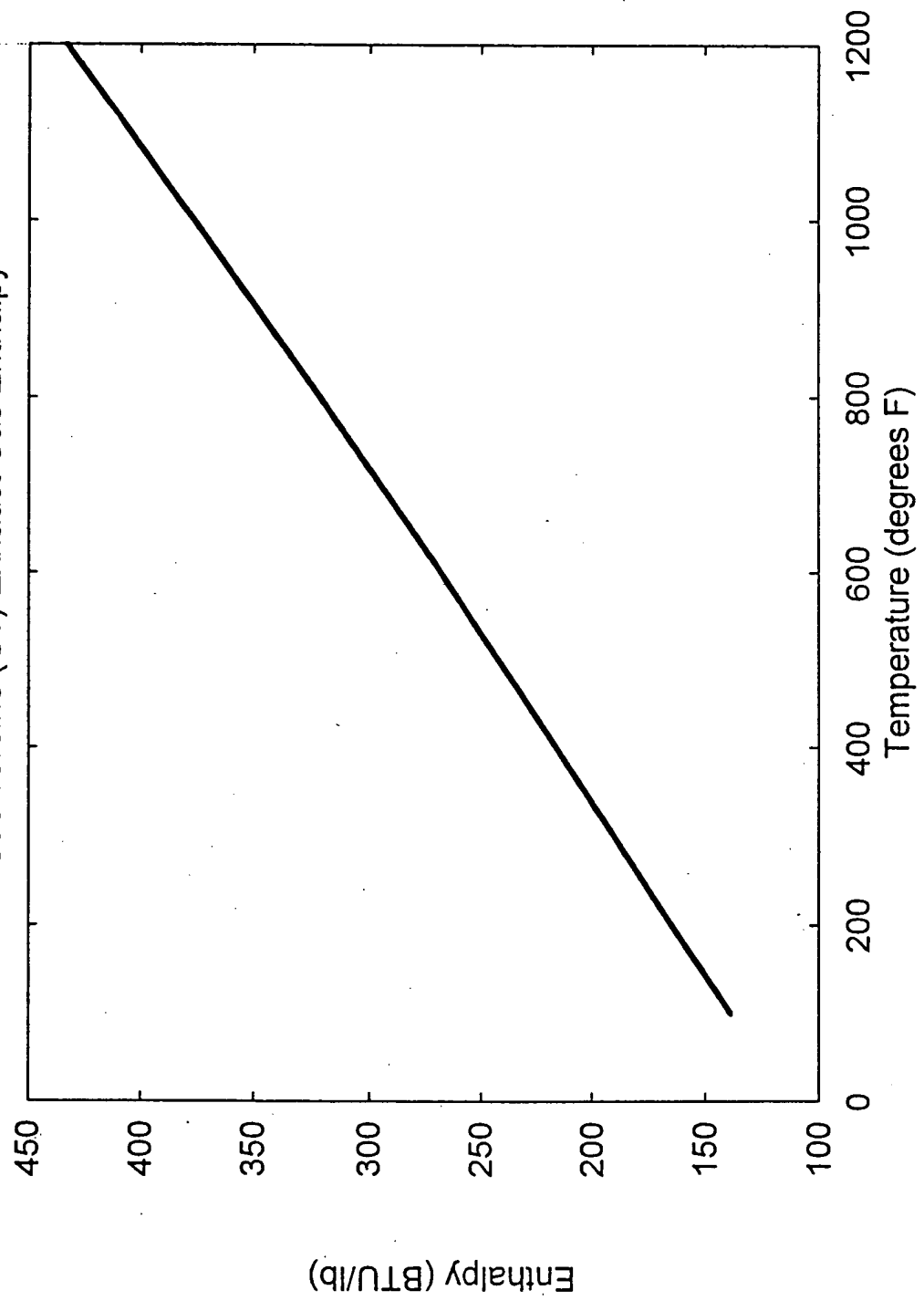
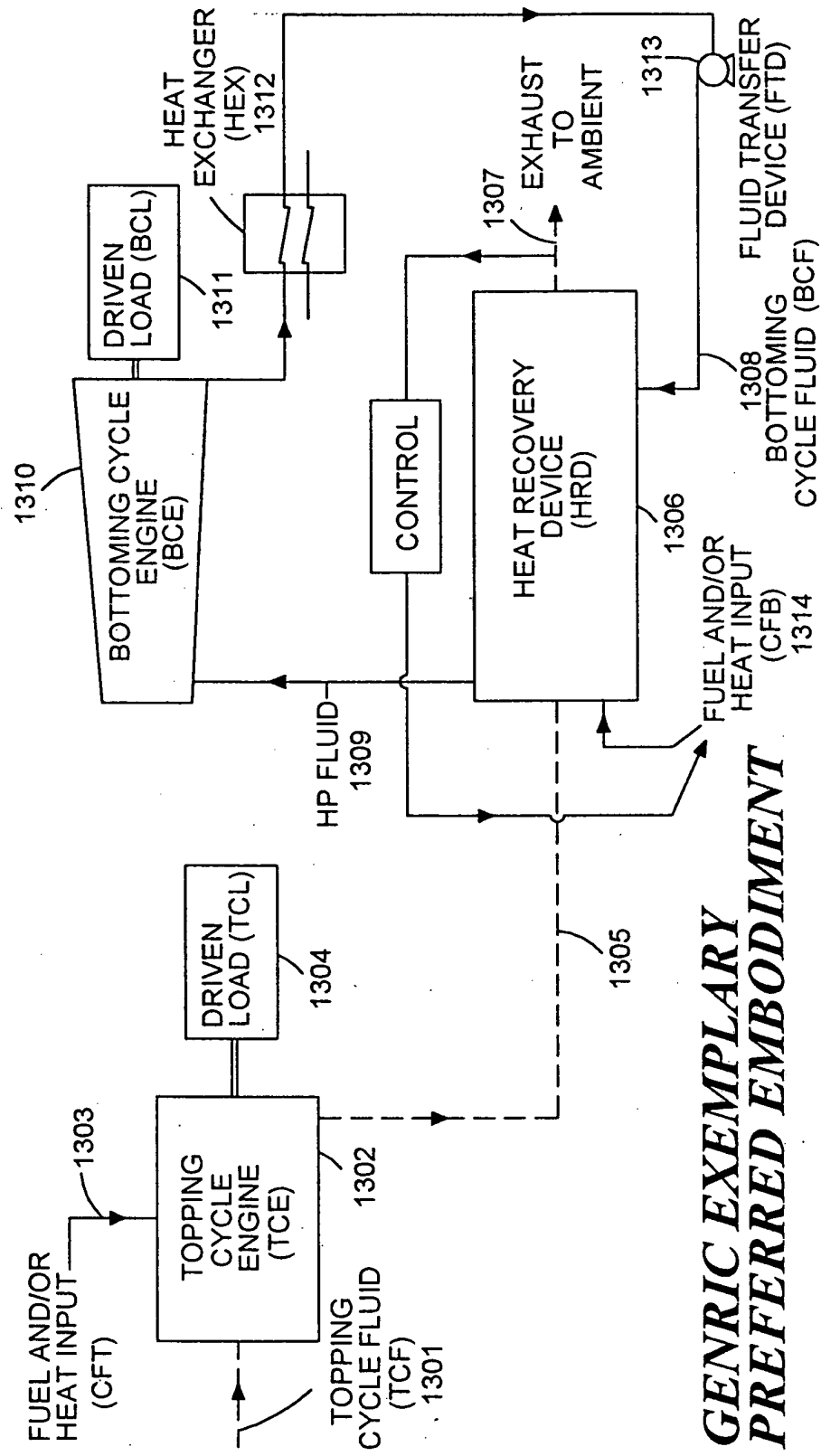


FIG. 13



**GENERIC EXEMPLARY
PREFERRED EMBODIMENT**

FIG. 14

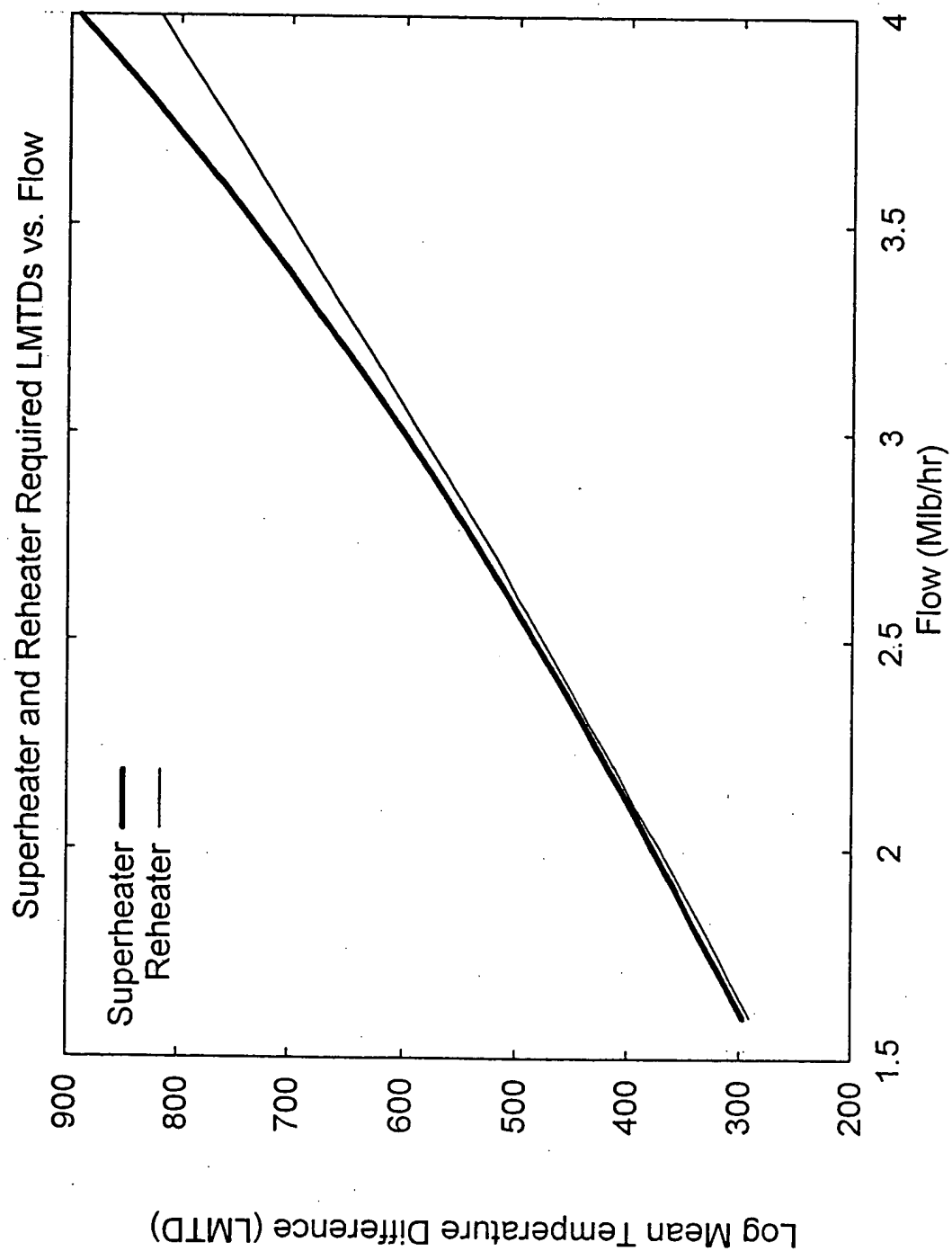


FIG. 15

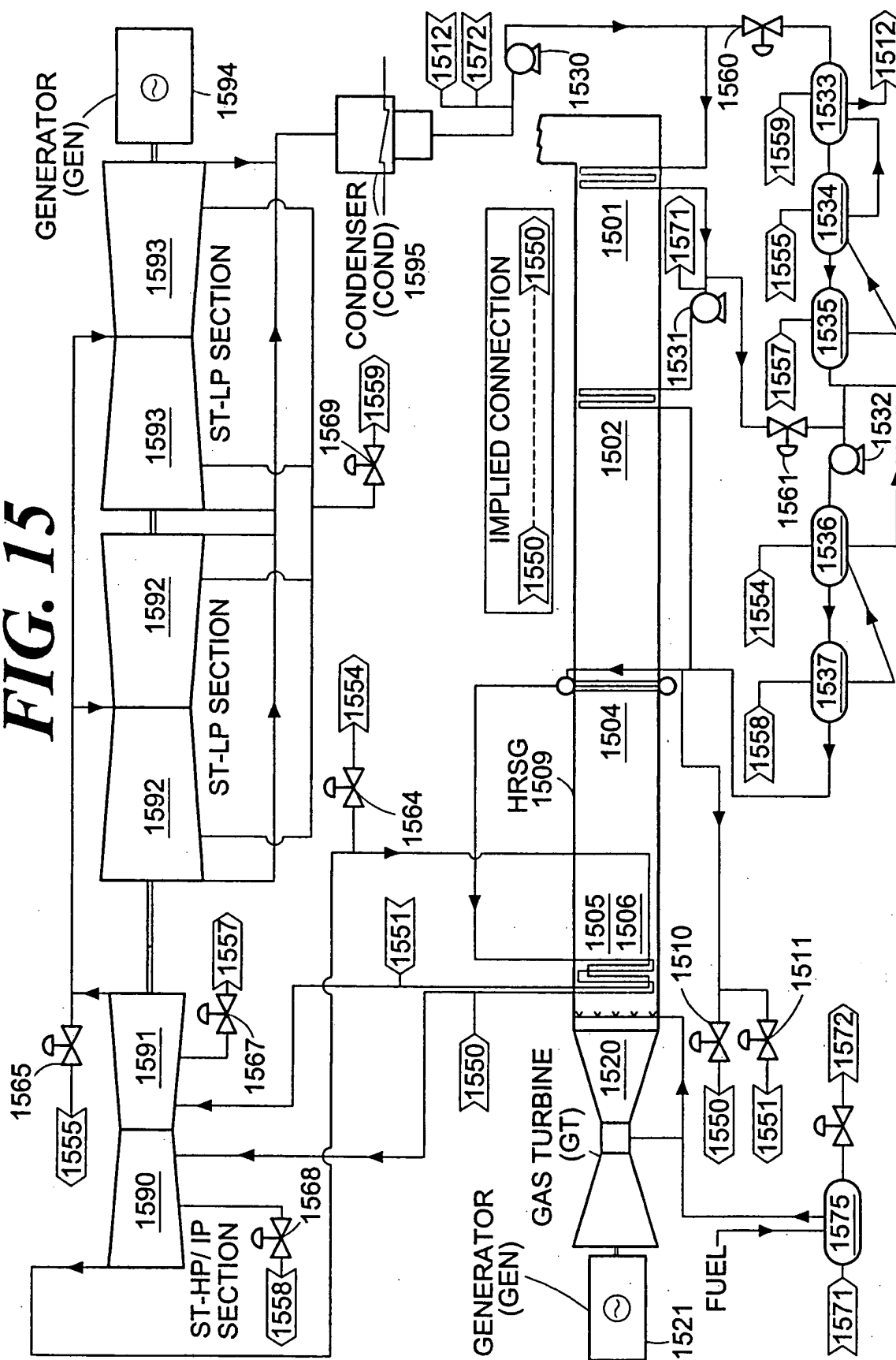
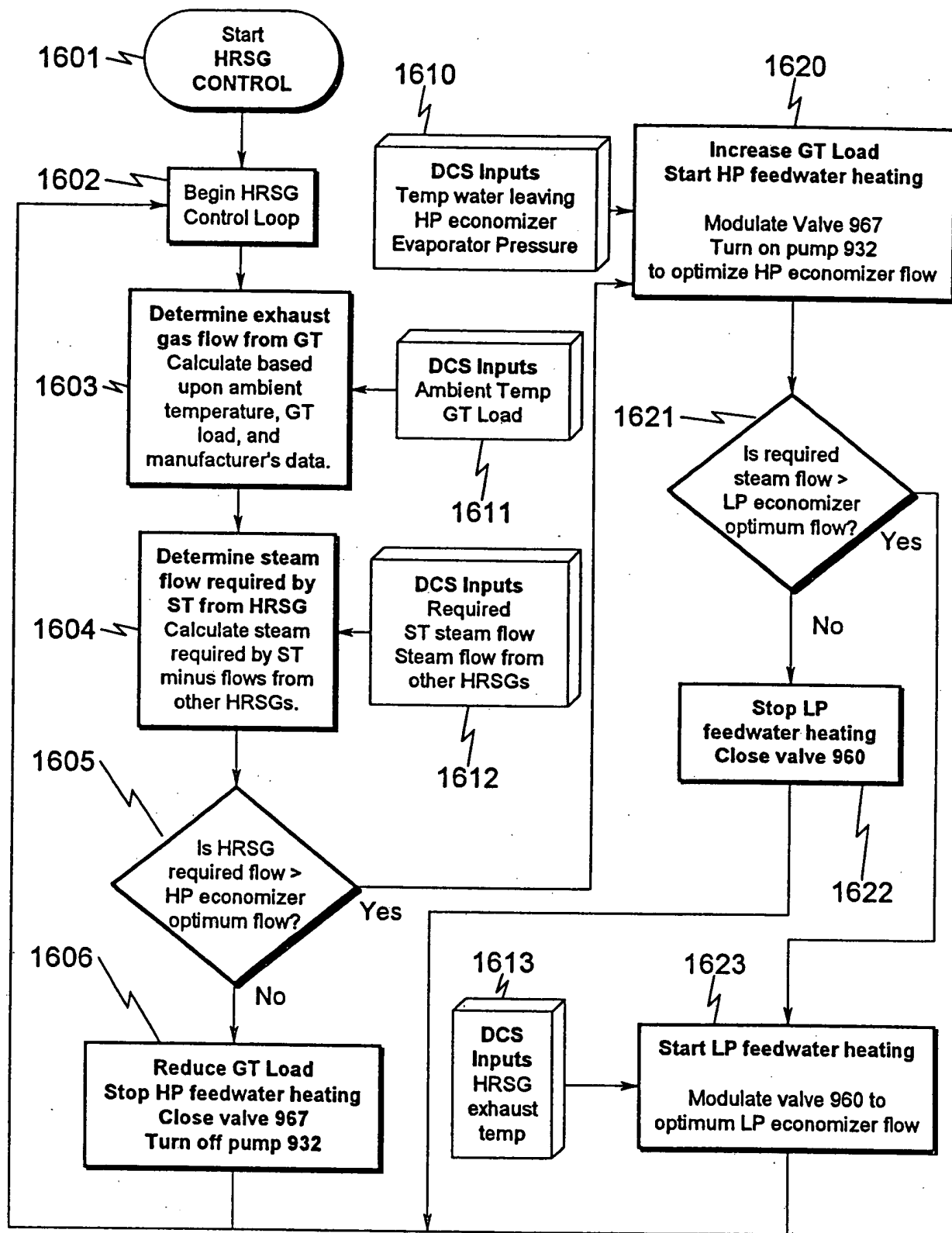


FIG. 16



Valve/Pump Numbers Refer to FIG. 9

FIG. 17

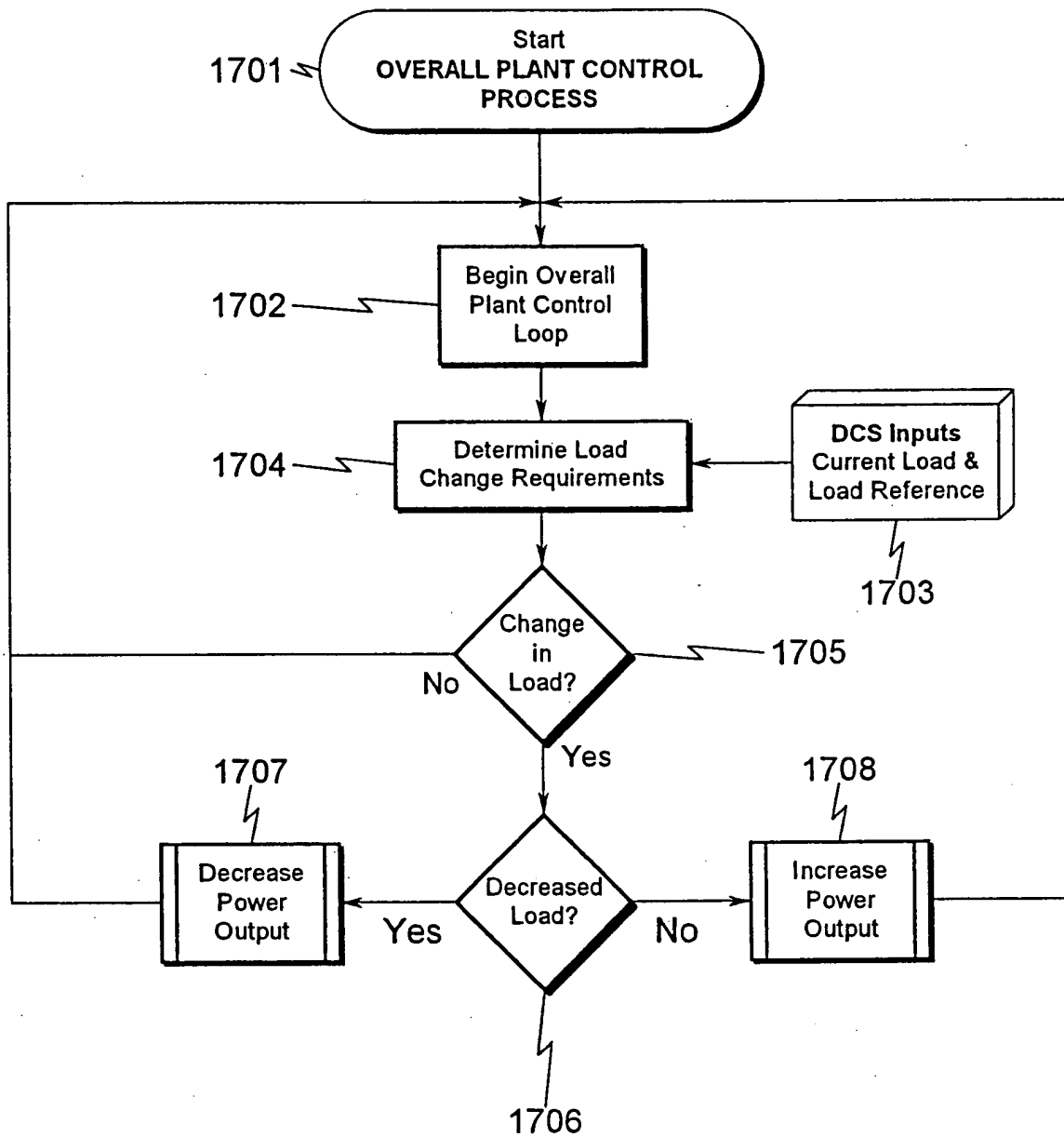


FIG. 18

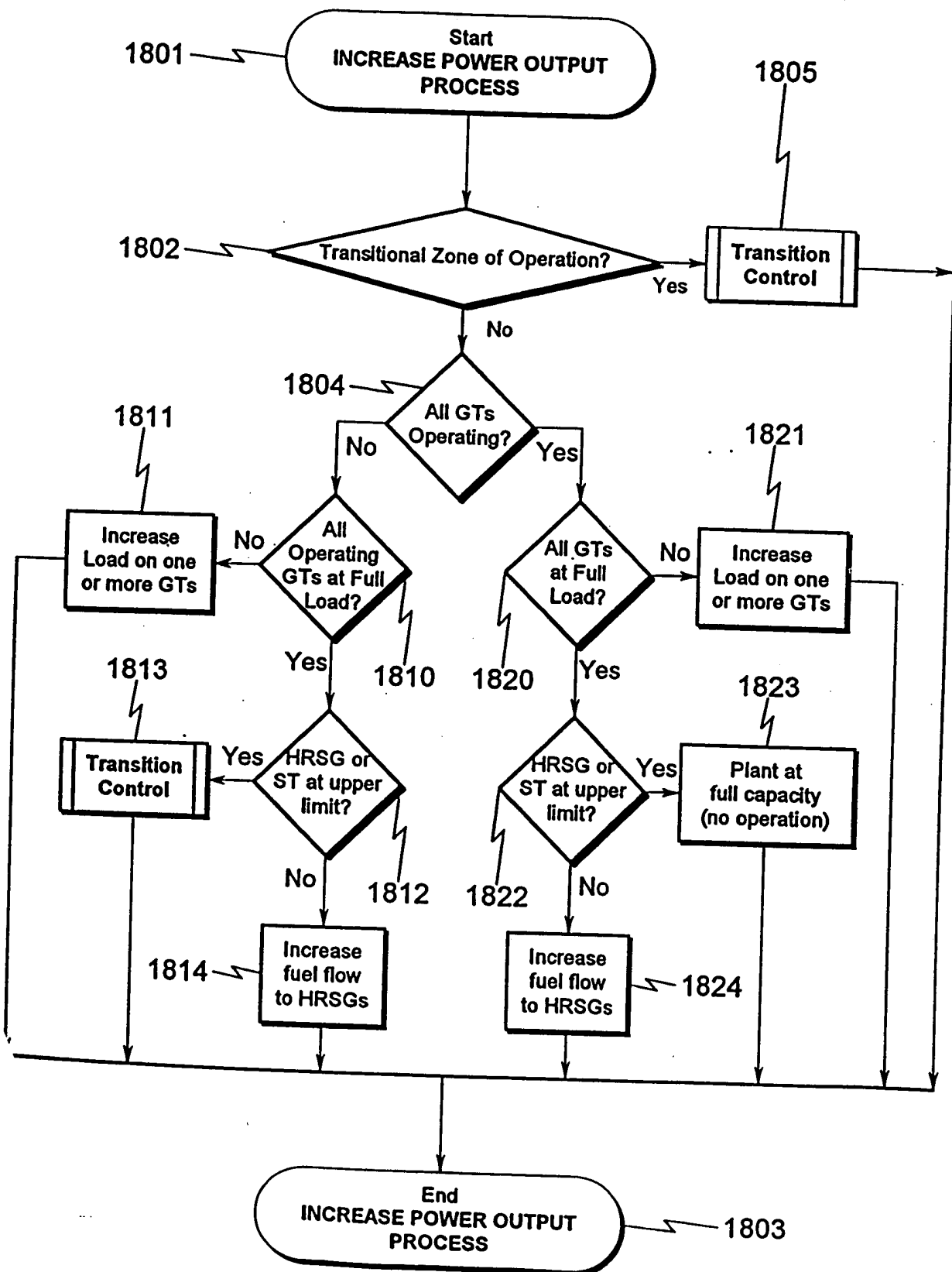


FIG. 19

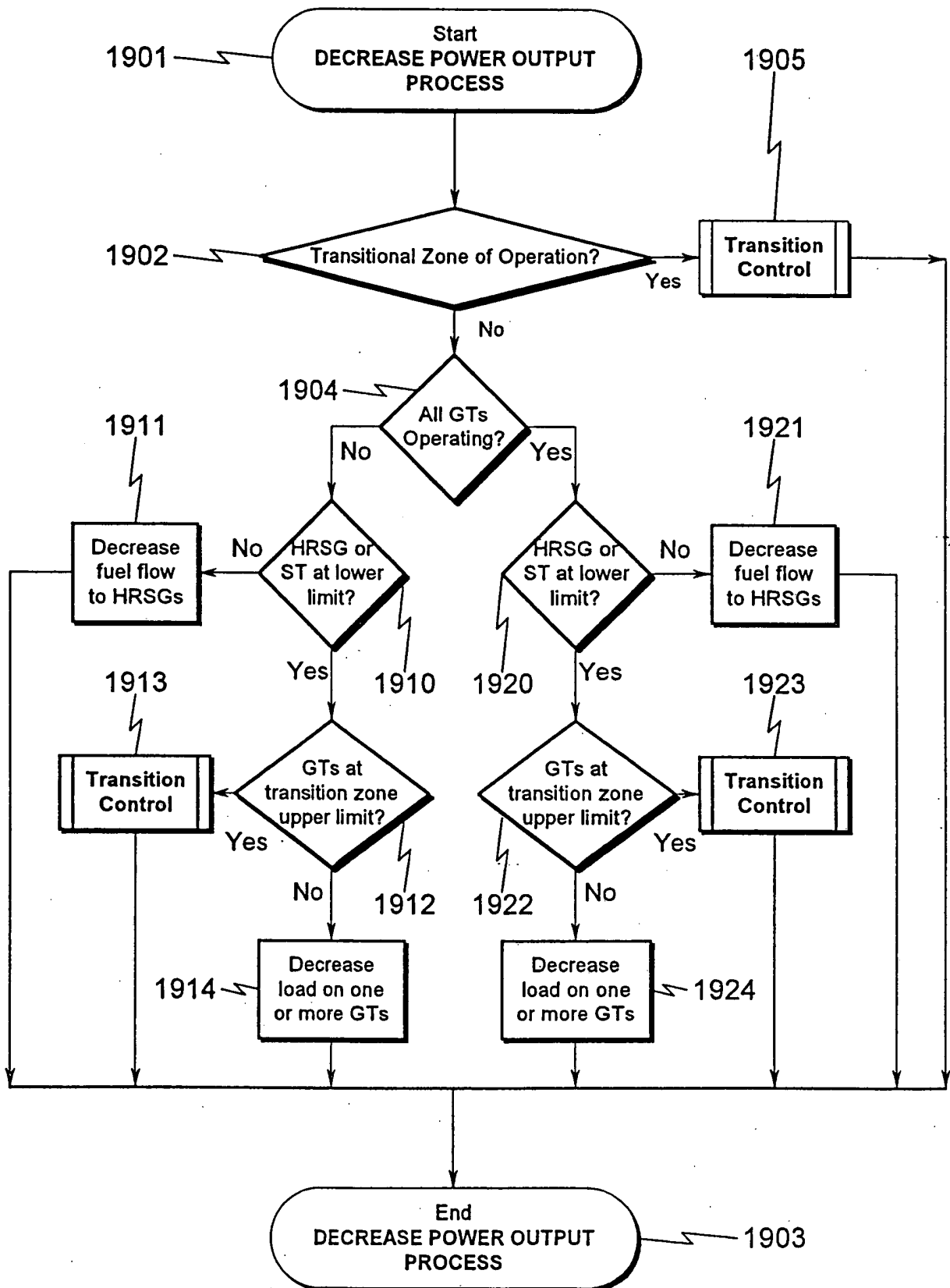


FIG. 20

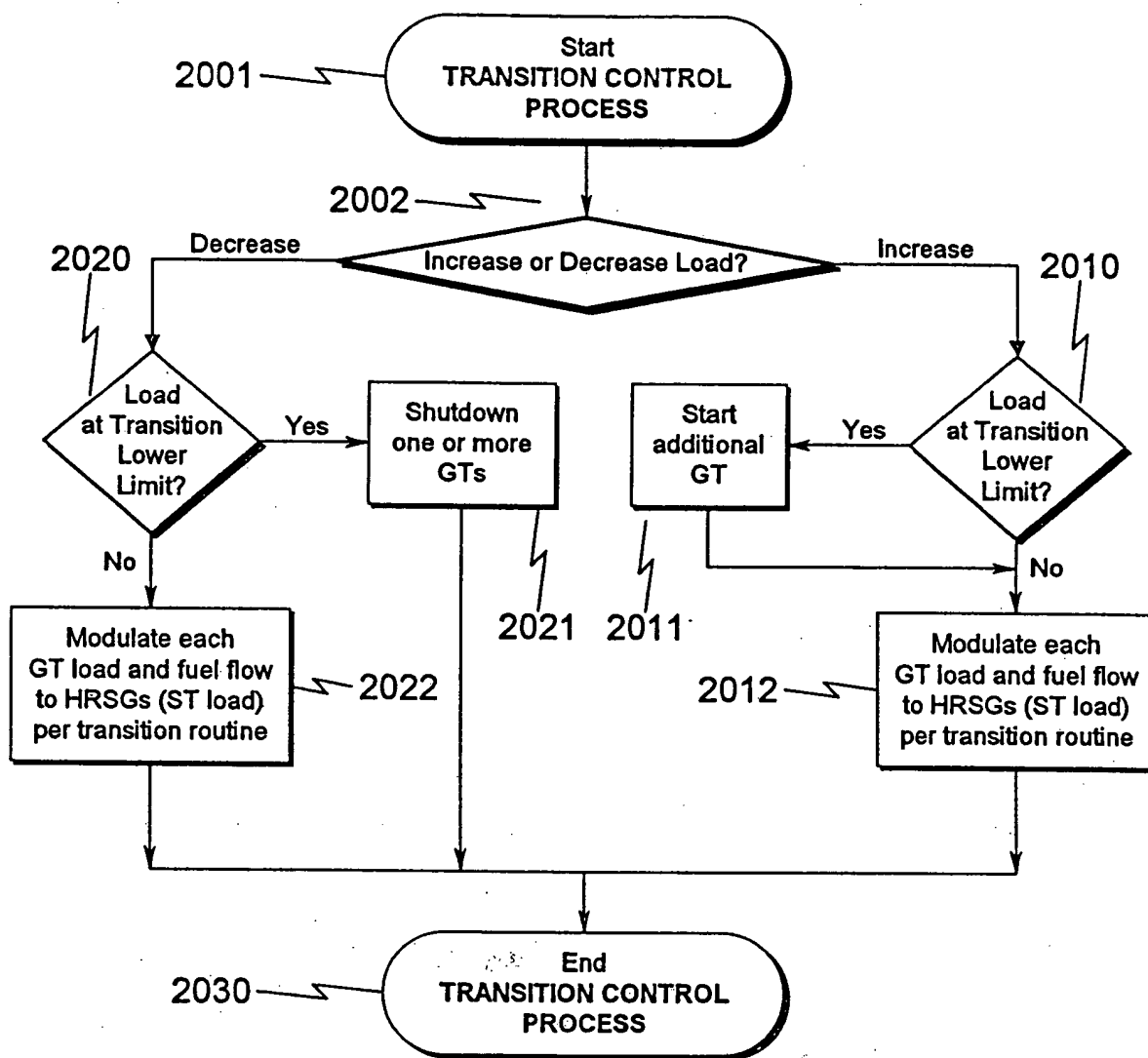
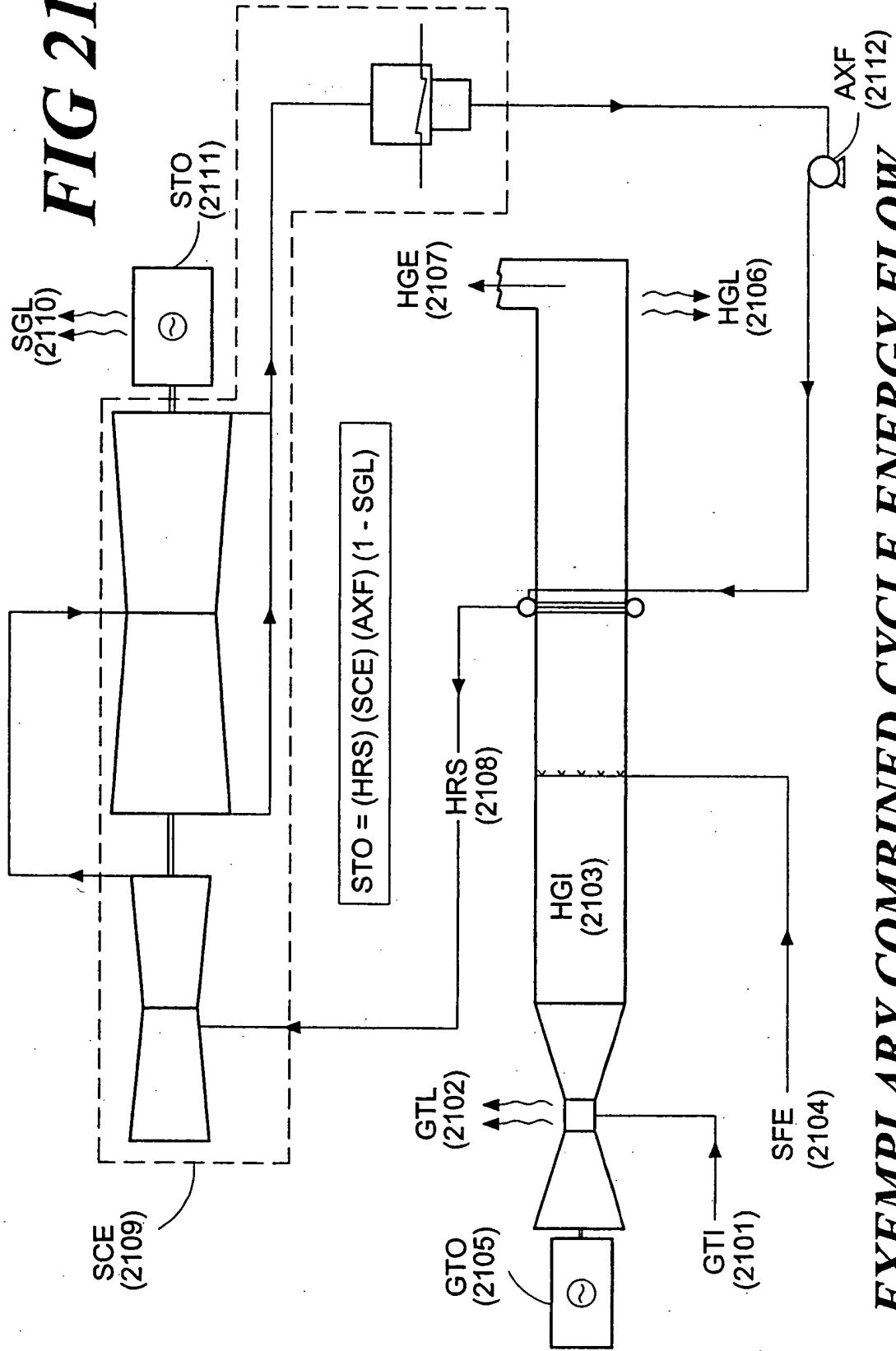


FIG 21



EXEMPLARY COMBINED CYCLE ENERGY FLOW

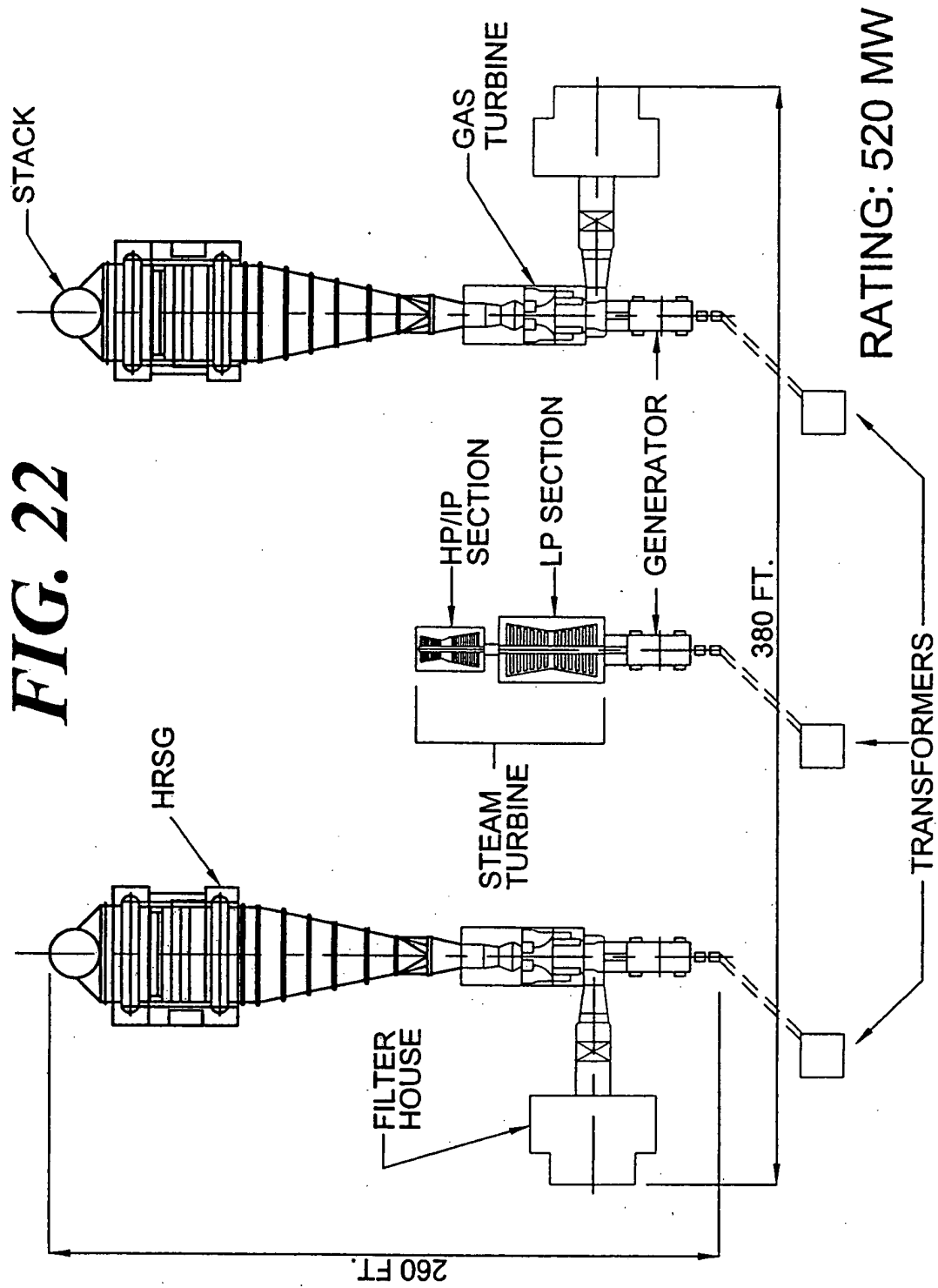


FIG. 22

GE S207FA COMBINED-CYCLE PLANT LAYOUT

FIG. 23A

GE S207FA Combined Cycle Power Plant ISO Capacity – 521.6 MW

Major Equipment			
<u>Qty</u>	<u>Equipment</u>	<u>MW</u>	<u>Total MW</u>
2	GE Model 7241 FA Gas Turbines	168.8	337.6
1	GE 1800 psig steam turbine	190.0	190.0
2	HRSGs, three pressure levels		
1	Auxiliary equipment (BFPs, circulation pumps, etc.)	-6.0	-6.0
Net Plant Output		<u>521.6</u>	MW

Plant Operation Profile	
Hours per Week @ Peak Power	20
Peak Power Heat Rate Correction	1.00
% of Peak Power	1.00
Hours per Week @ Intermediate Power Level	71
Intermediate Power Heat Rate Correction	1.02
% of Peak Power	0.80
Hours per Week @ Night Power Level	77
Night Power Heat Rate Correction	1.19
% of Peak Power	0.60

Plant Performance		
Plant heat rate at full load	6040	BTU/kWh LHV
Natural gas fuel ratio HHV/LLV	1.11	
Plant Capacity Factor	73.21	%
Heat Rate Correction Factor for Off Peak Operation	1.0806	
Plant Availability	8500	hours/yr
Average Natural Gas Cost	\$3.00	per MMBTU
Annual Electric Production	3,246,028,571	kWh
Annual Fuel Consumption	23,516,781	MMBTU
Annual Fuel Cost	<u>\$70,550,343</u>	

FIG. 23B

GE S207FA Combined Cycle Power Plant ISO Capacity – 521.6 MW

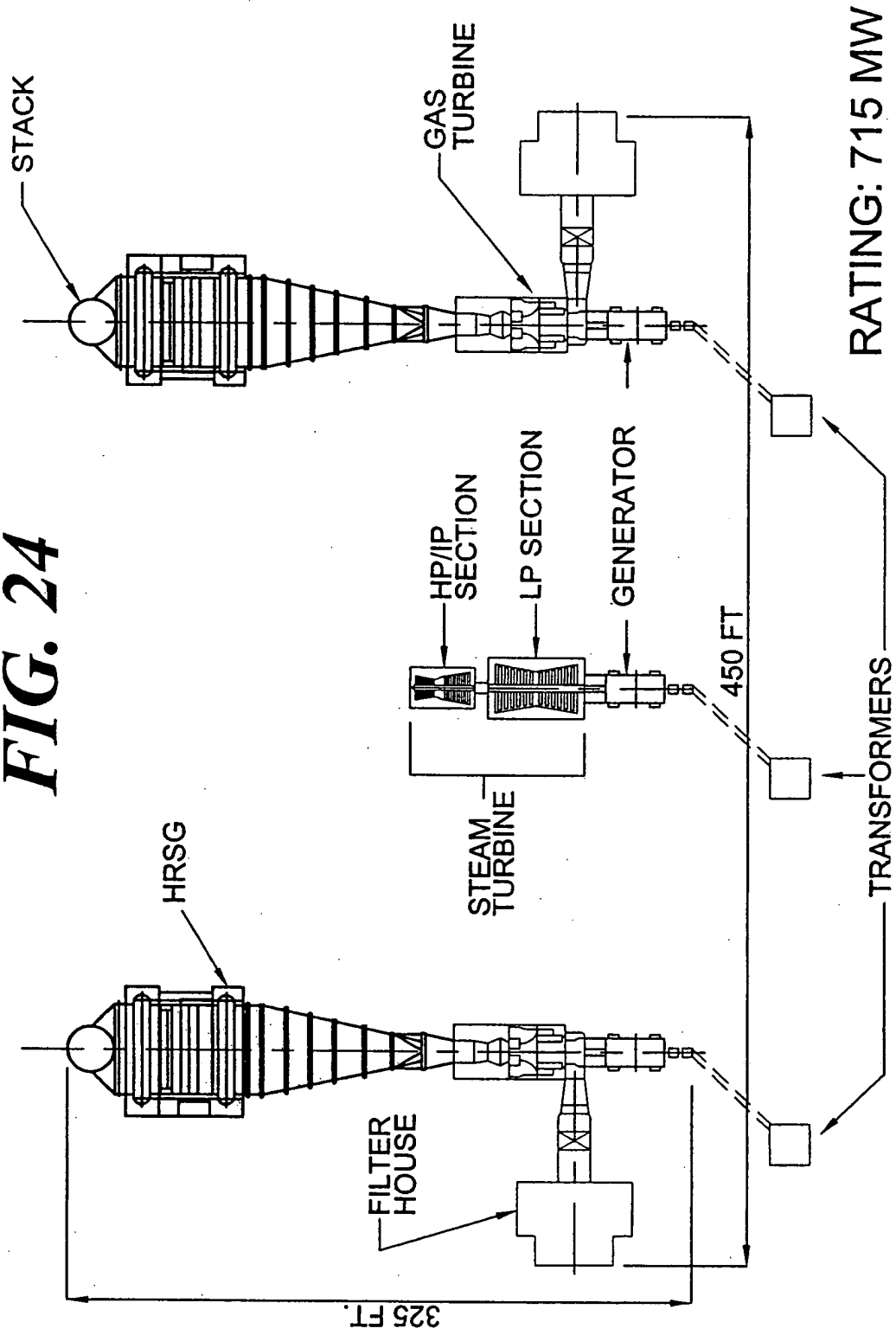
Plant Capital Costs		
Average Installed Cost	\$425	\$/kW
Total Plant Cost	\$221,680,000	
Interest Rate	8.00%	
Finance Period	20	years
Annual Loan Payment (12 monthly installments)	<u>\$22,250,644</u>	

Plant Maintenance		
GT Maintenance Cost	\$0.0025	per kWh
ST Maintenance Cost	\$0.0005	per kWh
Average Maintenance Cost	\$0.0018	per kWh
Annual Maintenance Cost	<u>\$5,777,143</u>	

Net Costs per kWh		
Fuel Cost	\$0.0217	
Capital Cost	\$0.0069	
Maintenance Cost	\$0.0018	
Total Fuel, Capital, and Maintenance Costs	<u>\$0.0304</u>	

NOx Emissions		
Peak Power Exhaust Flow per Gas Turbine	3,542,000	lb/hr
Peak Power NOx Levels	9	ppm
Peak Power Exhaust Flow	100.00%	
Intermediate Power NOx Levels	9	ppm
Intermediate Power Exhaust Flow	85.00%	
Night Power NOx Levels	9	ppm
Night Power Exhaust Flow	73.00%	
Expected Emissions (No aftertreatment)	352.41	tons/yr
Expected Emissions (90% Efficient SCR)	35.24	tons/yr

FIG. 24



WESTINGHOUSE 2X1 501G COMBINED-CYCLE PLANT

FIG. 25A

Westinghouse 2X1 501G Combined Cycle Power Plant ISO Capacity – 715.5 MW

Major Equipment			
<u>Qty</u>	<u>Equipment</u>	<u>MW</u>	<u>Total MW</u>
2	Westinghouse Model 501G Gas Turbines	239.4	478.8
1	Westinghouse 1800 psig steam turbine	244.7	244.7
2	HRSs, three pressure levels		
1	Auxiliary equipment (BFPs, circulation pumps, etc.)	-8.0	-8.0
Net Plant Output		<u>715.5</u>	MW

Plant Operation Profile	
Hours per Week @ Peak Power	20
Peak Power Heat Rate Correction	1.00
% of Peak Power	1.00
Hours per Week @ Intermediate Power Level	71
Intermediate Power Heat Rate Correction	1.02
% of Peak Power	0.80
Hours per Week @ Night Power Level	77
Night Power Heat Rate Correction	1.19
% of Peak Power	0.60

Plant Performance		
Plant heat rate at full load	5830	BTU/kWh LHV
Natural gas fuel ratio HHV/LLV	1.11	
Plant Capacity Factor	73.21	%
Heat Rate Correction Factor for Off Peak Operation	1.0806	
Plant Availability	8500	hours/yr
Average Natural Gas Cost	\$3.00	per MMBTU
Annual Electric Production	4,452,709,821	kWh
Annual Fuel Consumption	31,137,342	MMBTU
Annual Fuel Cost	<u>\$93,412,027</u>	

FIG. 25B

Westinghouse 2X1 501G Combined Cycle Power Plant ISO Capacity – 715.5 MW

Plant Capital Costs

Average Installed Cost	\$475	\$/kW
Total Plant Cost	\$339,862,500	
Interest Rate	8.00%	
Finance Period	20	years
Annual Loan Payment (12 monthly installments)	<u>\$34,112,954</u>	

Plant Maintenance

GT Maintenance Cost	\$0.0045	per kWh
ST Maintenance Cost	\$0.0005	per kWh
Average Maintenance Cost	\$0.0031	per kWh
Annual Maintenance Cost	<u>\$14,013,266</u>	

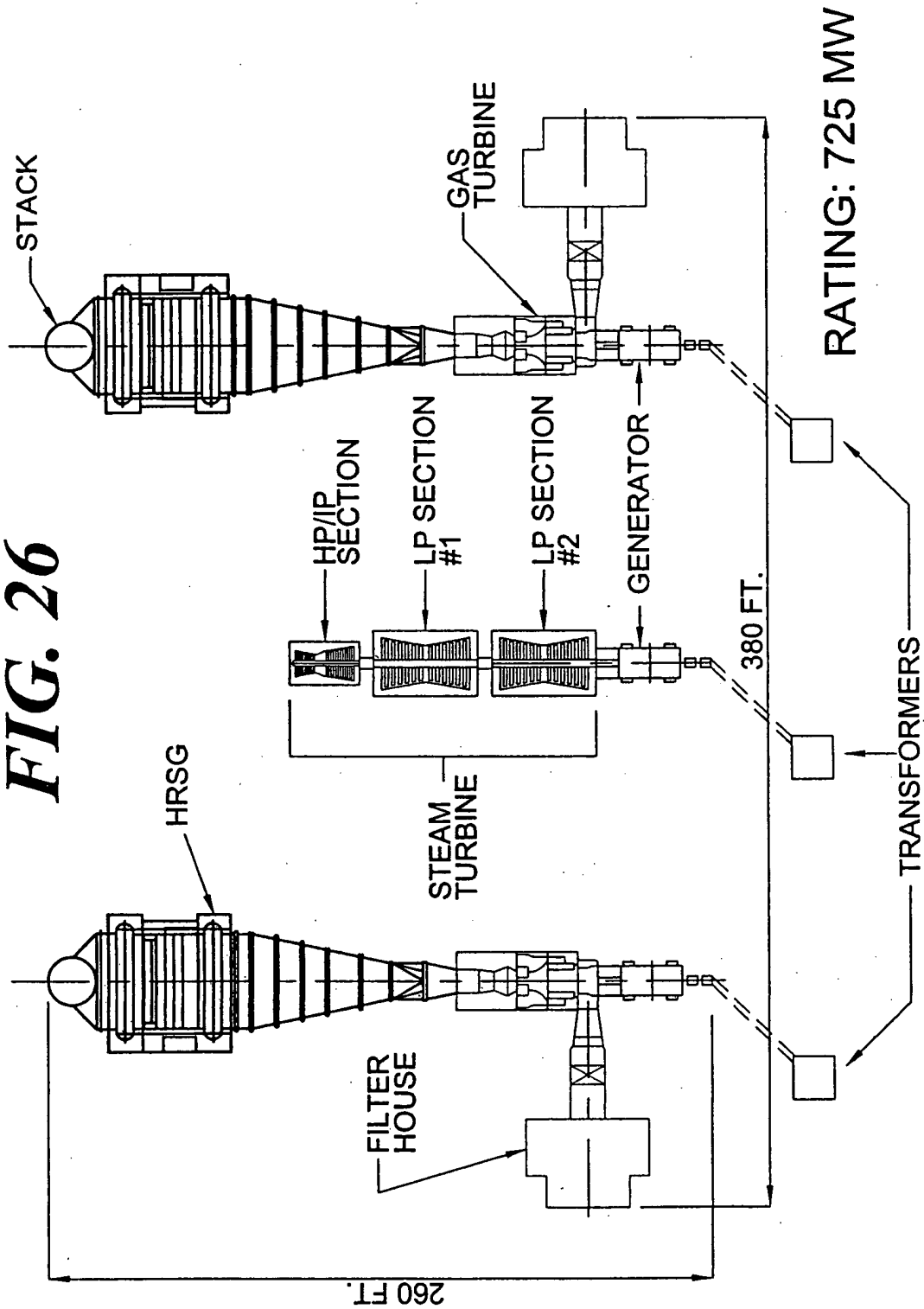
Net Costs per kWh

Fuel Cost	\$0.0210
Capital Cost	\$0.0077
Maintenance Cost	\$0.0031
Total Fuel, Capital, and Maintenance Costs	<u>\$0.0318</u>

NOx Emissions

Peak Power Exhaust Flow per Gas Turbine	4,365,000	lb/hr
Peak Power NOx Levels	42	ppm
Peak Power Exhaust Flow	100.00%	
Intermediate Power NOx Levels	50	ppm
Intermediate Power Exhaust Flow	85.00%	
Night Power NOx Levels	60	ppm
Night Power Exhaust Flow	73.00%	
Expected Emissions (No aftertreatment)	2554.81	tons/yr
Expected Emissions (90% Efficient SCR)	255.48	tons/yr

FIG. 26



PREFERRED EMBODIMENT 725 MW COMBINED CYCLE

FIG. 27A

Exemplary Preferred Embodiment Combined Cycle Power Plant ISO Capacity – 725 MW

Major Equipment			
<u>Qty</u>	<u>Equipment</u>	<u>MW</u>	<u>Total MW</u>
2	GE Model 7241 FA Gas Turbines	168.8	337.6
1	GE 2400 psig steam turbine	395.9	395.9
2	HRSGs, three pressure levels		
1	Auxiliary equipment (BFPs, circulation pumps, etc.)	-8.5	-8.5
Net Plant Output		<u>725</u>	MW

Plant Operation Profile		
Hours per Week @ Peak Power	20	
Peak Power Heat Rate Correction	1.00	
% of Peak Power	1.00	
Hours per Week @ Intermediate Power Level	71	
Intermediate Power Heat Rate Correction	1.00	
% of Peak Power	0.80	
Hours per Week @ Night Power Level	77	
Night Power Heat Rate Correction	1.03	
% of Peak Power	0.60	

Plant Performance		
Plant heat rate at full load	6006	BTU/kWh LHV
Natural gas fuel ratio HHV/LLV	1.11	
Plant Capacity Factor	73.21	%
Heat Rate Correction Factor for Off Peak Operation	1.0095	
Plant Availability	8500	hours/yr
Average Natural Gas Cost	\$3.00	per MMBTU
Annual Electric Production	4,511,830,357	kWh
Annual Fuel Consumption	30,365,273	MMBTU
Annual Fuel Cost	<u>\$91,095,818</u>	

FIG. 27B

Exemplary Preferred Embodiment Combined Cycle Power Plant ISO Capacity – 725 MW

Plant Capital Costs		
----------------------------	--	--

Average Installed Cost	\$330	\$/kW
Total Plant Cost	\$239,250,000	
Interest Rate	8.00%	
Finance Period	20	years
Annual Loan Payment (12 monthly installments)	<u>\$24,014,194</u>	

Plant Maintenance		
--------------------------	--	--

GT Maintenance Cost	\$0.0025	per kWh
ST Maintenance Cost	\$0.0005	per kWh
Average Maintenance Cost	\$0.0011	per kWh
Annual Maintenance Cost	<u>\$4,737,422</u>	

Net Costs per kWh	
--------------------------	--

Fuel Cost	\$0.0202
Capital Cost	\$0.0053
Maintenance Cost	\$0.0011
Total Fuel, Capital, and Maintenance Costs	<u>\$0.0266</u>

NOx Emissions		
----------------------	--	--

Peak Power Exhaust Flow per Gas Turbine	3,542,000	lb/hr
Peak Power NOx Levels	20.9	ppm
Peak Power Exhaust Flow	100.76%	
Intermediate Power NOx Levels	15.29	ppm
Intermediate Power Exhaust Flow	92.87%	
Night Power NOx Levels	31.26	ppm
Night Power Exhaust Flow	50.72%	
Expected Emissions (No aftertreatment)	759.90	tons/yr
Expected Emissions (90% Efficient SCR)	75.99	tons/yr

FIG 28

Part Load Efficiency Preferred Embodiment vs. Prior Art

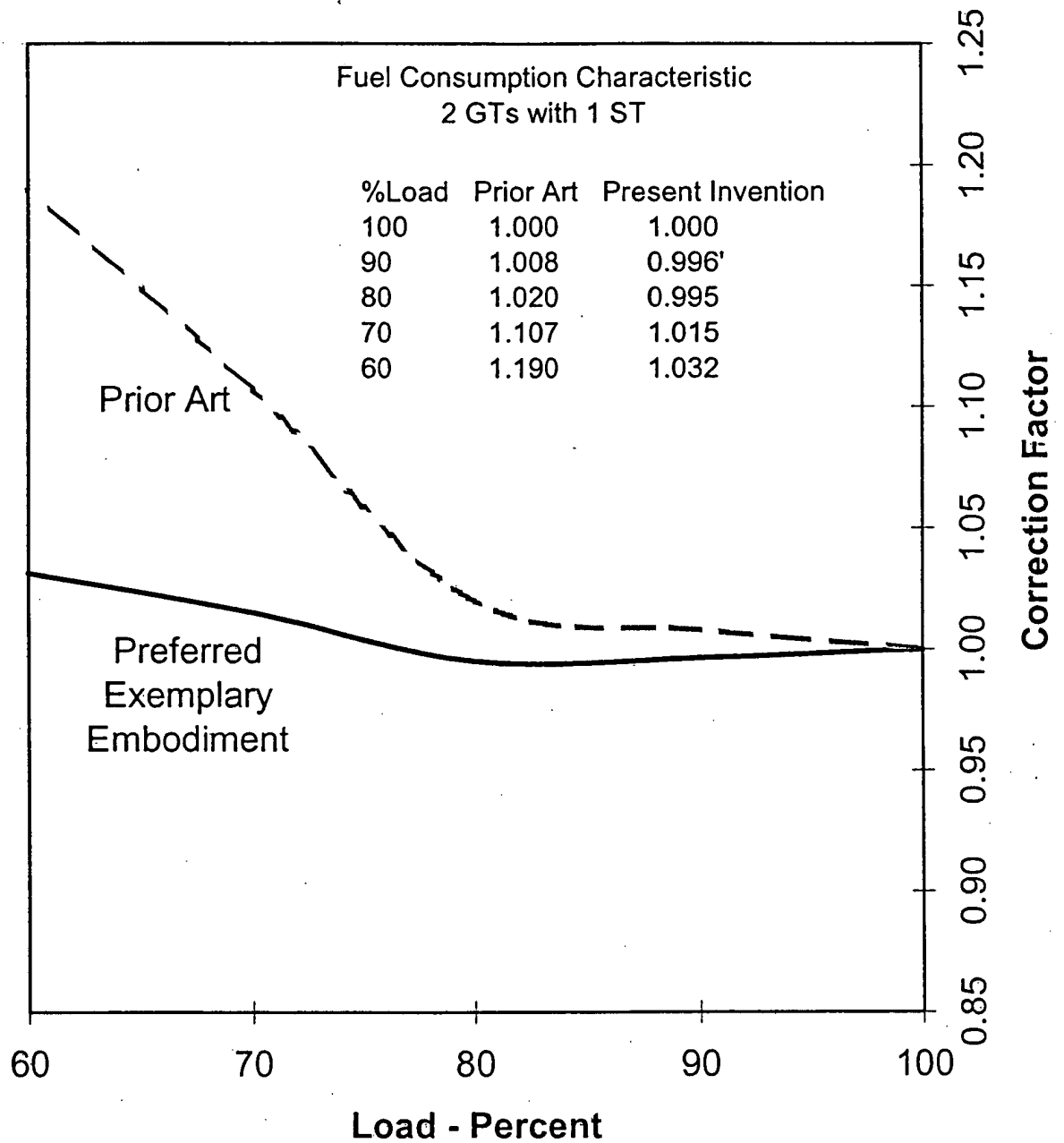


FIG. 29

Preferred Exemplary Embodiment Power Plant Range Selection Chart
(Partial Equipment List Using Common Industry Components)

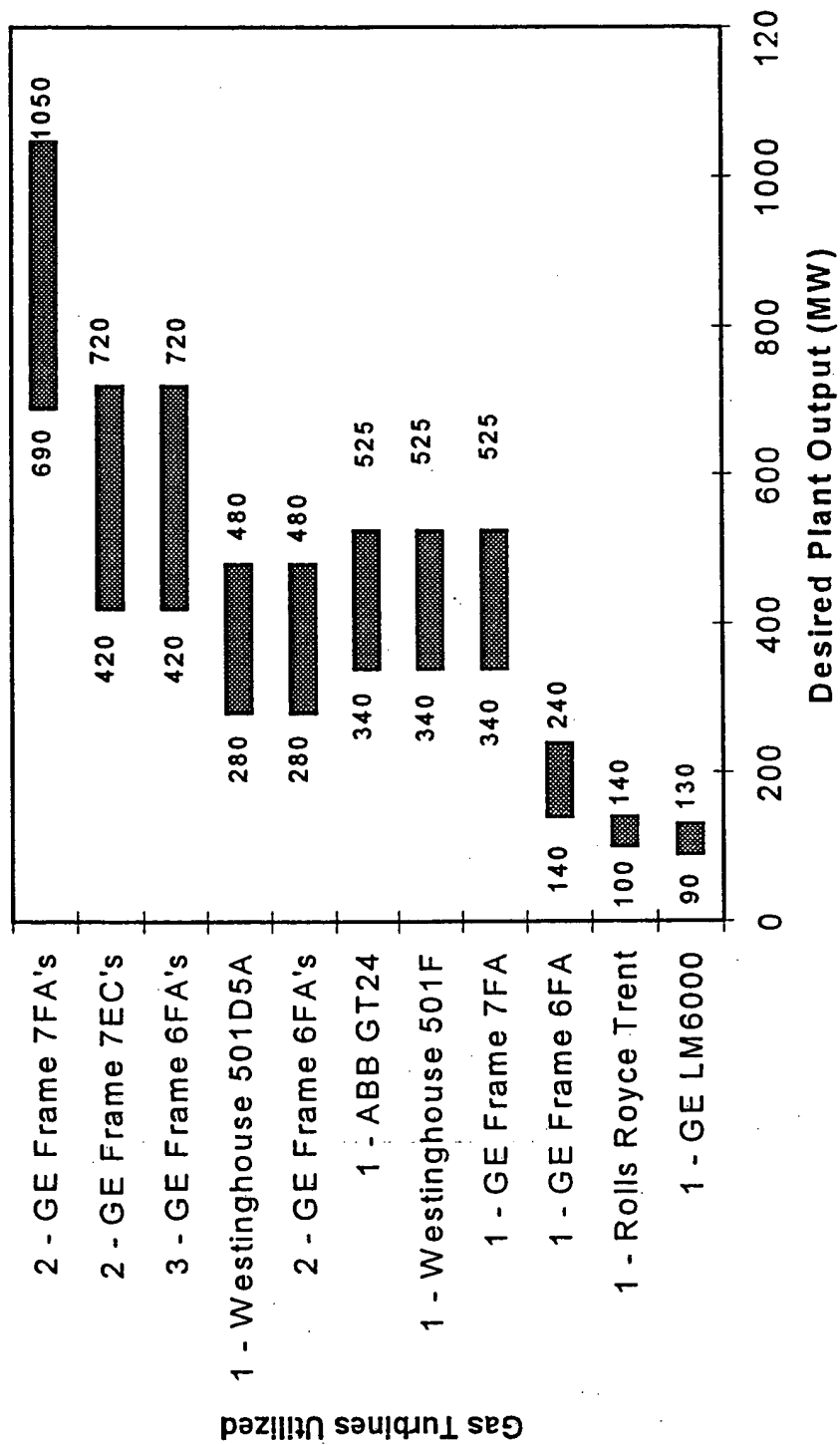


FIG. 30

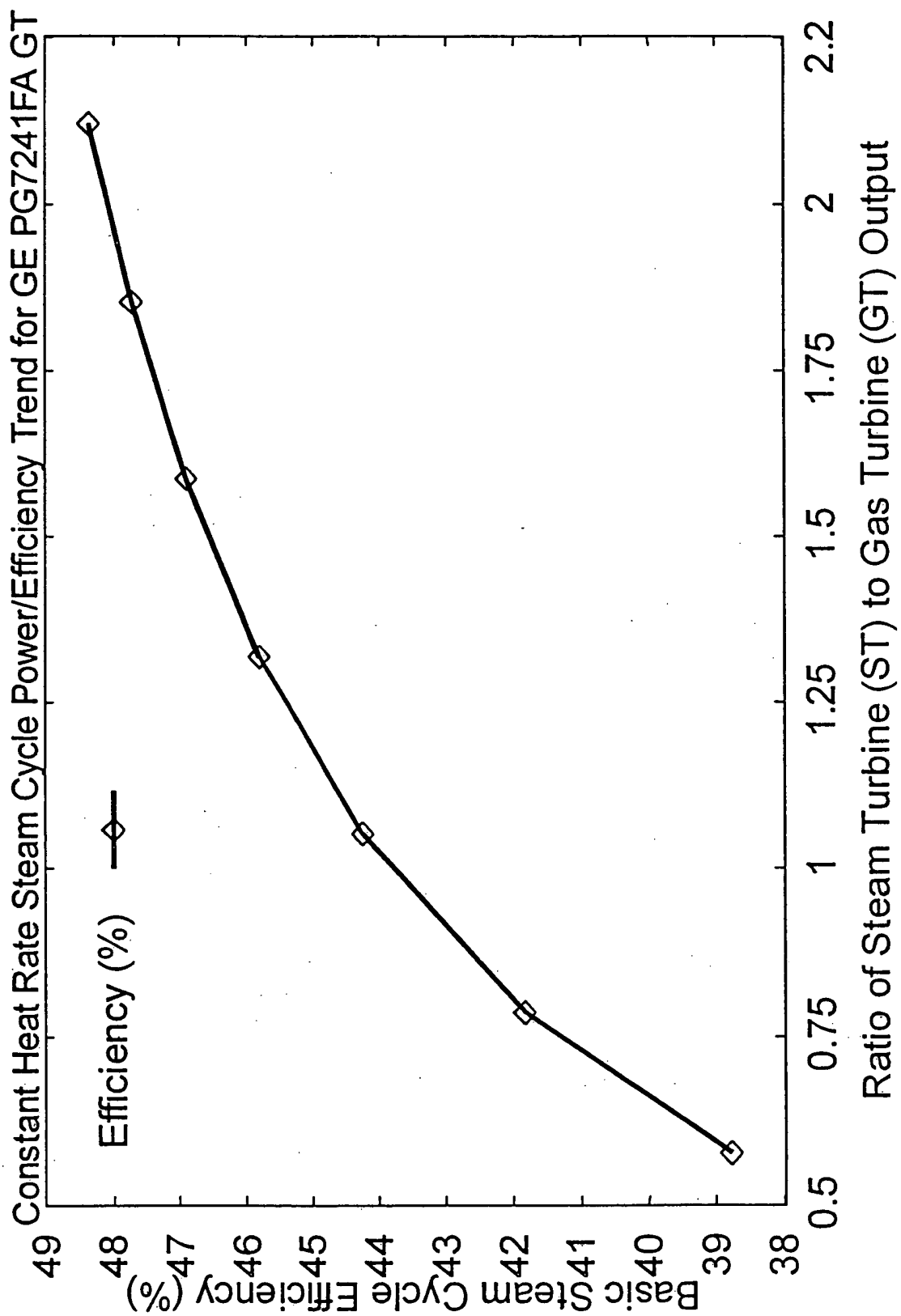


FIG. 31A

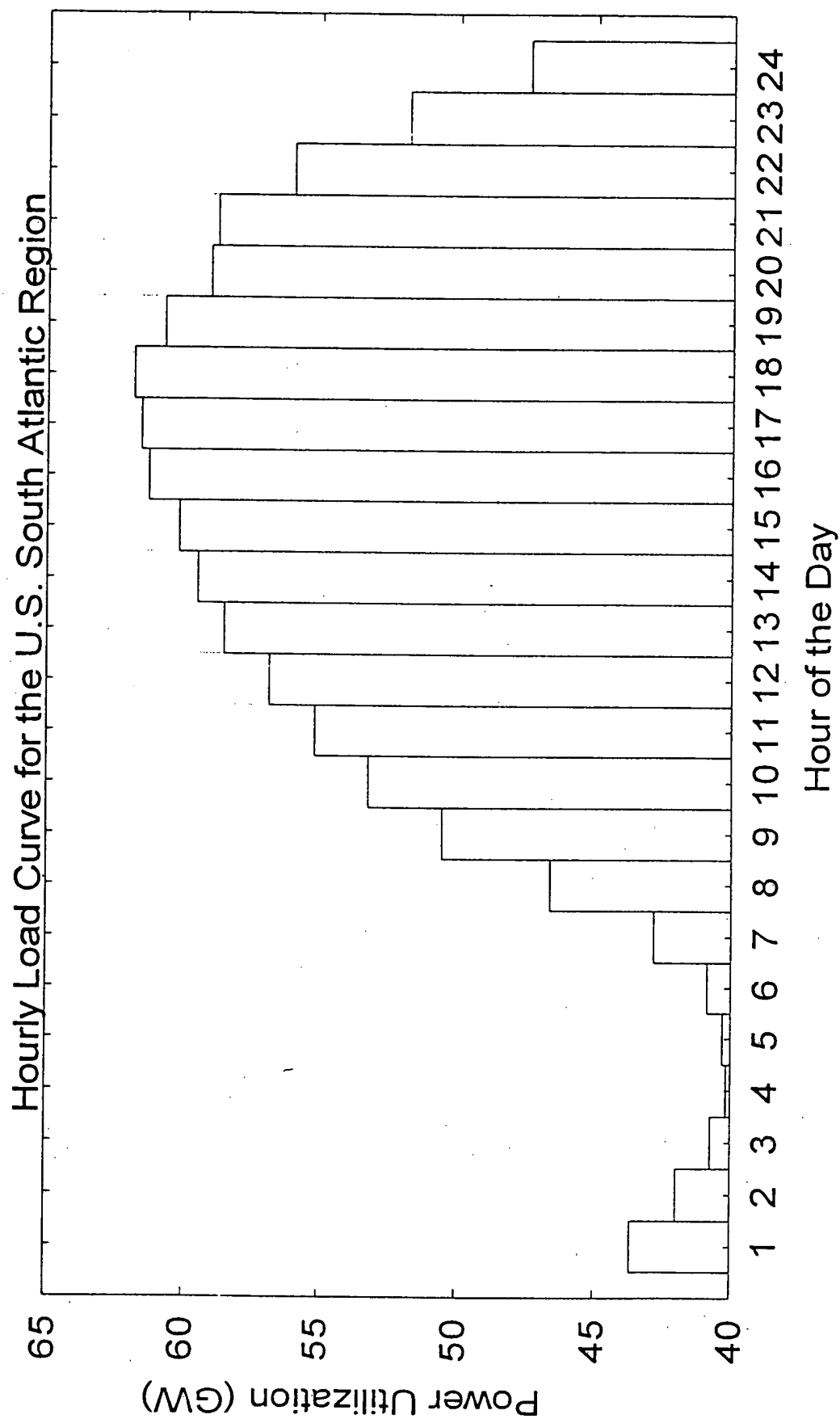


FIG. 31B

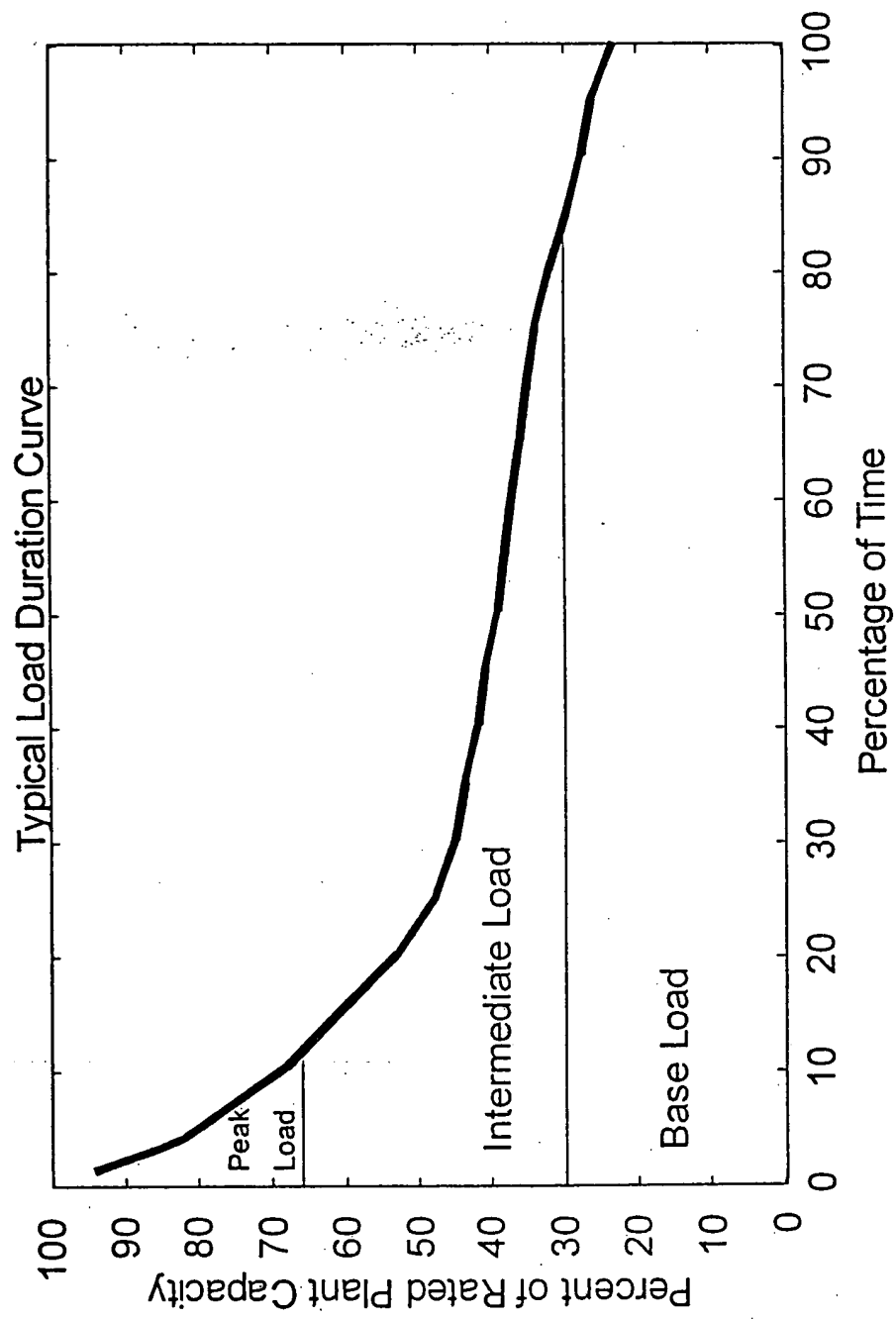


FIG. 32

Typical Load Profile
(Based upon DOE Information from FIG. 31A)

System Capacity

70 GW

Weekday Profile		
Hour	Period	GW
1	Night	43
2	Night	42
3	Night	41
4	Night	40
5	Night	40
6	Night	41
7	Night	42
8	Night	47
		336
9	Intermediate	51
10	Intermediate	53
11	Intermediate	55
12	Intermediate	57
13	Intermediate	59
14	Intermediate	60
15	Intermediate	60
		395
16	Peak	61
17	Peak	62
18	Peak	62
19	Peak	61
		246
20	Intermediate	59
21	Intermediate	58
22	Intermediate	56
23	Intermediate	52
		225
24	Night	48

Weekend Profile			
8 hours/day @ Intermediate Power Level			
16 hours/day @ Night Power Level			
Weekday Totals			
Period	Average GW	Average % Capacity	Weekday Hours
Night	42.67	60.95%	45
Intermediate	56.36	80.52%	55
Peak	61.50	87.86%	20
Overall	52.08	74.40%	120
Weekend Totals			
Period	Average GW	Average % Capacity	Weekend Hours
Night	42.67	60.95%	32
Intermediate	56.36	80.52%	16
Peak	0.00	0.00%	0
Overall	47.23	67.47%	48
Totals for Entire Week			
Period	Average GW	Average % Capacity	Hours
Night	42.67	60.95%	77
Intermediate	56.36	80.52%	71
Peak	61.50	87.86%	20
Overall	50.70	72.42%	168

FIG 33

Part Load Efficiency Comparison

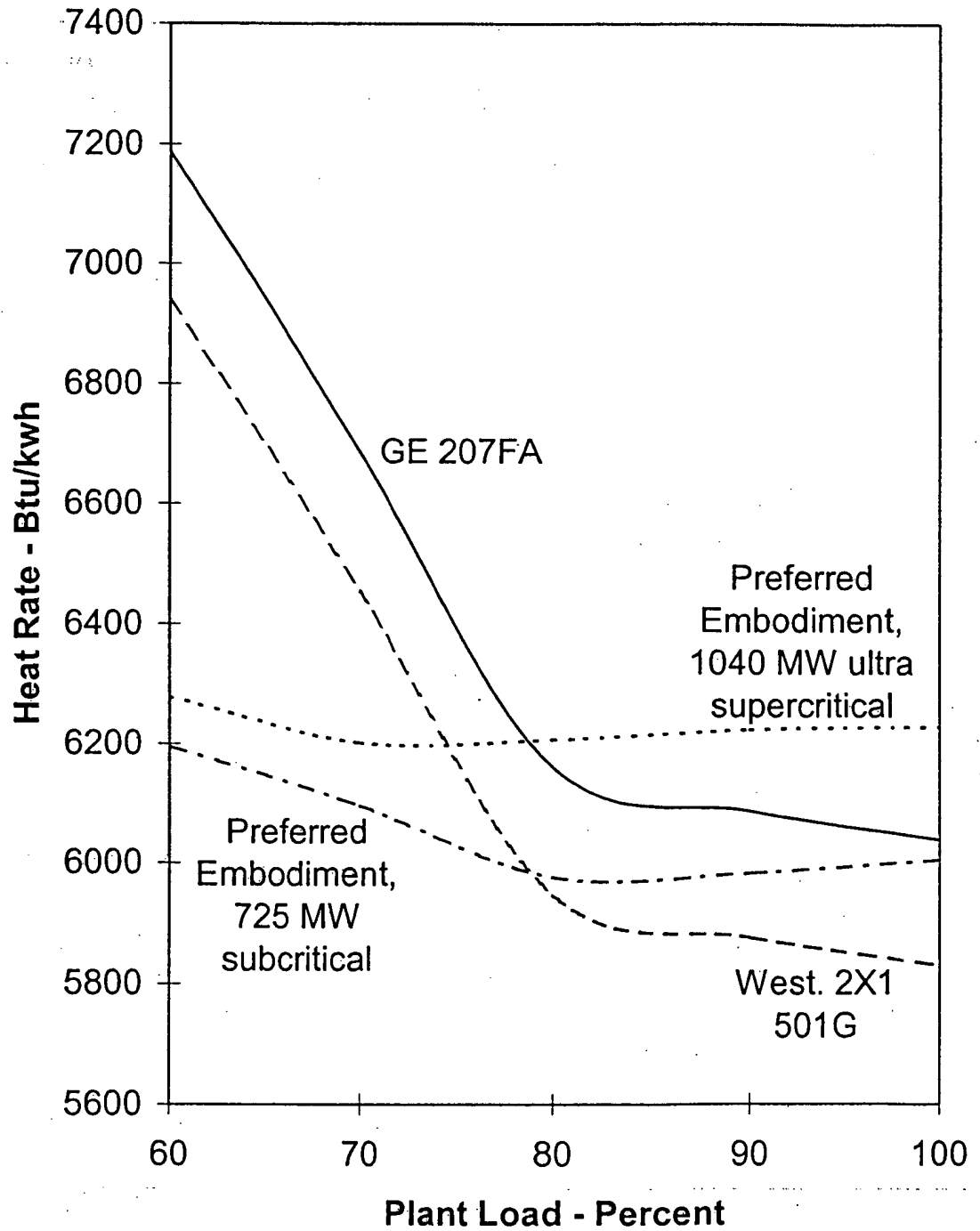


FIG. 34

ECONOMIC COMPARISON									
Combined Cycle Plant	GT Technology	Fuel Costs	Capital Costs	Maintenance Costs	Total Major Costs	Net Electricity Produced	Average Cost Per kWh	NOX Emissions	Specific NOX Emissions
		MM US\$	MM US\$	MM US\$	MM US\$	MM kWh	US\$/kWh	tons	tons/MM kWh
General Electric GE S207FA (520 MW)	GE "F" Technology	70.55	22.25	5.78	98.58	3,246	0.0304	35.24	0.0109
725 MW Invention Embodiment	GE "F" Technology	91.10	24.01	4.74	119.85	4,512	0.0266	75.99	0.0168
Net Cost Savings: 0.0038 Annual Savings: \$12.35 20 Year Savings: \$247.08									
Westinghouse W 2X1 501G (715 MW)	W "G" Technology	93.41	34.11	14.01	141.54	4,453	0.0318	255.48	0.0574
725 MW Invention Embodiment	GE "F" Technology	91.10	24.01	4.74	119.85	4,512	0.0266	75.99	0.0168
Net Cost Savings: 0.0052 Annual Savings: \$23.26 20 Year Savings: \$465.22									

- NOTES: (1) Fuel costs at \$3.00 per MM BTU
 (2) Load profile from 60 to 100% utilizing a trend typical for current electrical usage
 (3) Capital costs assume a 100% loan at 8% interest for 20 years
 (4) Total costs include fuel, capital, and maintenance costs

FIG 35

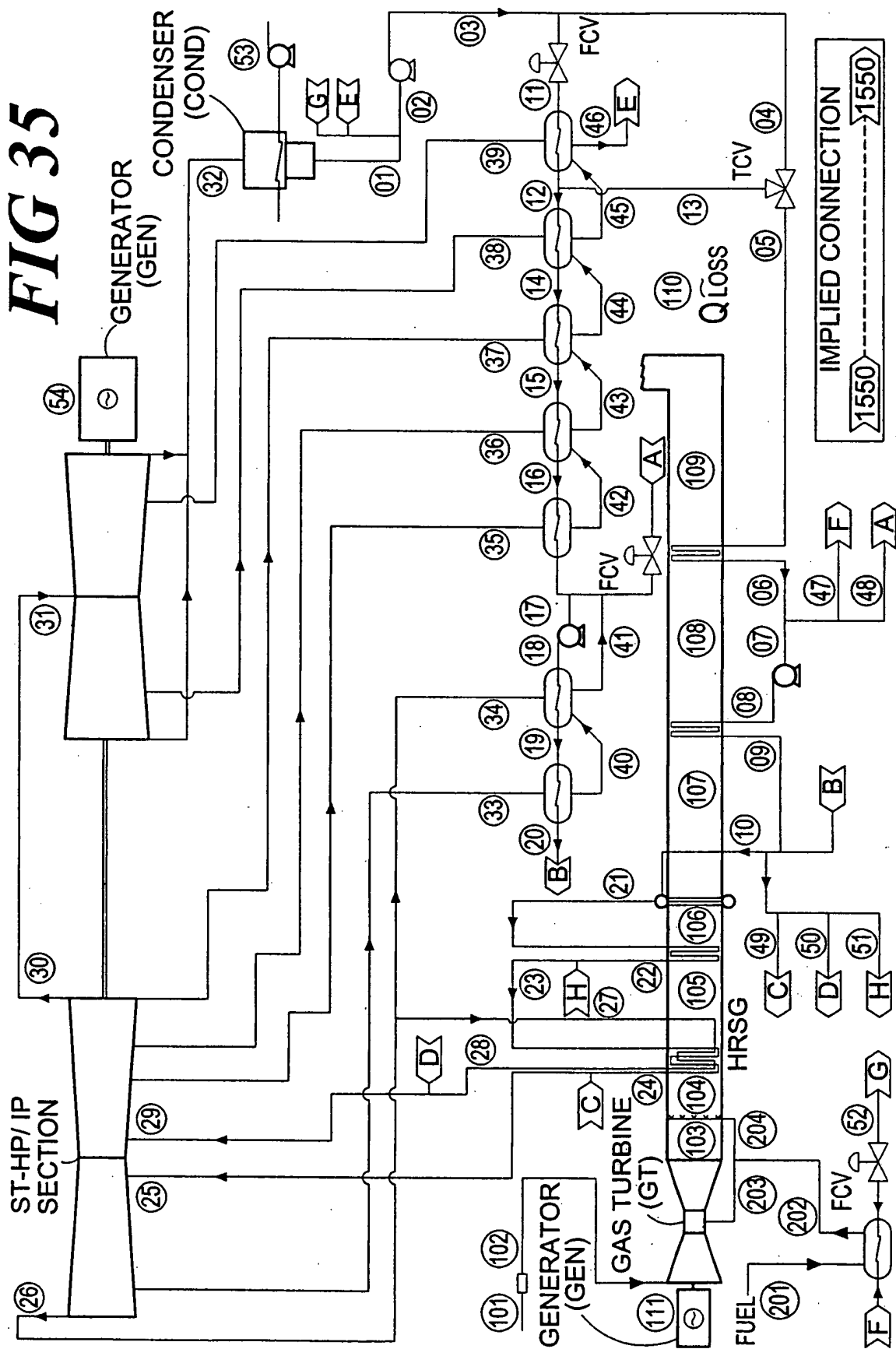


FIG 36

Exemplary Preferred Embodiment Heat Balance							
725 MW Combined Cycle with 2 - GE Frame 7 GTs, 2400 psig steam cycle							
Steam/Feedwater System							
Point	Pressure	Temp	Enthalpy	Flow	Heat Input	Power	Comments
	psia	Degrees F	BTU/lb	lb/hr	MMBTU /hr	kW	
1	0.59	84.66	52.689	1749377			
2	0.59	84.66	53.754	1956488			
3	550.00	86.29	55.793	1956488		-1169	Pump power, point 2 - 3
4	539.00	86.29	55.793	994750			
5	539.00	119.18	88.521	1775863			Preheat feedwater to dew point of exhaust gases
6	528.22	386.06	360.471	1775863			
7	528.22	386.06	360.471	1366048			
8	3002.96	391.62	369.655	1366048		-3676	Pump power, point 7 - 8
9	2913.55	689.56	780.423	1366048			
10	2913.55	664.61	713.255	1776869			
11	550.00	86.29	55.793	961739			
12	539.00	160.93	130.200	180625			
13	550.00	160.93	130.200	781113			Feedwater - Exit FWH 1
14	528.22	229.41	198.872	180625			Feedwater - Exit FWH 2
15	517.66	298.23	268.796	180625			Feedwater - Exit FWH 3
16	507.30	355.21	327.796	180625			Feedwater - Exit FWH 4
17	497.16	408.59	384.714	180625			Feedwater - Exit FWH 5
18	3002.96	404.80	383.553	599668		-1634	Pump power, point 17 - 18
19	2957.92	496.07	483.061	599668			Feedwater - Exit FWH 6
20	2913.55	561.37	560.245	599668			Feedwater - Exit FWH 7
21	2767.87	690.92	1037.440	1776869			Exit Evaporator
22	2684.84	854.67	1336.605	1776869			Exit Superheater Section 1
23	2684.84	845.18	1333.204	1786620			Enter Superheater Section 2
24	2681.22	1169.43	1562.578	1786620			Exit Superheater Section 2
25	2627.59	1050.00	1486.820	1965717			ST HP Section Inlet
26	672.00	667.80	1327.813	1913817			ST HP Section Outlet
27	672.00	667.80	1327.813	1855328			Enter Reheater Section
28	618.24	1050.00	1544.119	1855328			Exit Reheater Section
29	618.24	1050.00	1544.119	1855328			ST IP Section Inlet
30	64.95	486.64	1276.096	1836454			ST IP Section Outlet
31	63.65	486.37	1276.096	1825874			ST LP Section Inlet
32	0.59	84.66	973.250	1749377			ST LP Section Outlet

FIG 37

Exemplary Preferred Embodiment Heat Balance							
725 MW Combined Cycle with 2 - GE Frame 7 GTs, 2400 psig steam cycle							
Steam/Feedwater System							
Point	Pressure	Temp	Enthalpy	Flow	Heat Input	Power	Comments
	psia	Degrees F	BTU/lb	lb/hr	MMBTU /hr	kW	
33	1100.80	803.31	1386.731	51900			1st Extraction Steam to # 7 Feedwater Heater, 5% Press Drop
34	645.12	664.75	1327.813	58489			2nd Extraction Steam to # 6 Feedwater Heater, 5% Press Drop
35	243.32	801.33	1424.375	9462			3rd Extraction Steam to # 5 Feedwater Heater, 5% Press Drop
36	131.39	646.41	1350.853	9411			4th Extraction Steam to # 4 Feedwater Heater, 5% Press Drop
37	62.36	486.11	1276.096	10580			5th Extraction Steam to # 3 Feedwater Heater, 5% Press Drop
38	20.94	287.54	1185.142	9914			6th Extraction Steam to # 2 Feedwater Heater, 5% Press Drop
39	5.45	165.93	1094.921	66583			7th Extraction Steam to # 1 Feedwater Heater, 5% Press Drop
40	1100.80	506.07	494.933	51900			
41	645.12	418.59	395.673	110389			
42	243.32	365.15	337.873	9462			
43	131.39	308.23	278.313	18873			
44	62.36	239.41	207.926	29453			
45	20.94	170.93	138.940	39367			
46	5.45	96.29	64.305	105951			
47	528.22	386.06	360.471	101161			
48	528.22	386.06	360.471	308654			
49	2913.55	664.61	713.255	179097			
50	2913.55	664.61	713.255	0			
51	2913.55	664.61	713.255	9750			
52	528.22	93.33	62.807	101161			
53						-939	Pump power, cooling water
						-7418	Total Auxiliary Load
54						390878	ST Generator Output
						383460	Net Steam cycle power

FIG 38

Exemplary Preferred Embodiment Heat Balance							
725 MW Combined Cycle with 2 - GE Frame 7 GTs, 2400 psig steam cycle							
GT/HRSG System							
Point	Pressure	Temp	Enthalpy	Flow	Heat Input	Power	Comments
	psia	Degrees F	BTU/lb	lb/hr	MMBTU /hr	kW	
101	14.70	59.00		6954954			
102	14.59	59.00		6954954			
103	15.18	1123.00	412.64	7103452			
104	15.18	1650.65	573.79	7157276			
105	15.09	1267.65	459.31	7157276			
106	15.00	1002.46	384.29	7157276			
107	14.91	711.24	303.00	7157276			
108	14.82	417.83	223.80	7157276			
109	14.70	156.55	155.65	7157276			
110					-29.93		HRSG Heat Loss - 1%
111						341540	Net GT power
Fuel Gas System							
201	500.0	70.00	236.45	202322			
202	450.0	368.92	385.28	202322			
203	427.5	368.92	385.28	148498	3551.60		
204	45.0	368.92	385.28	53824	1281.87		

Totals	4833.47	725000
--------	---------	--------

Heat Rate, HHV	6667
Heat Rate, LHV	6006

FIG. 39

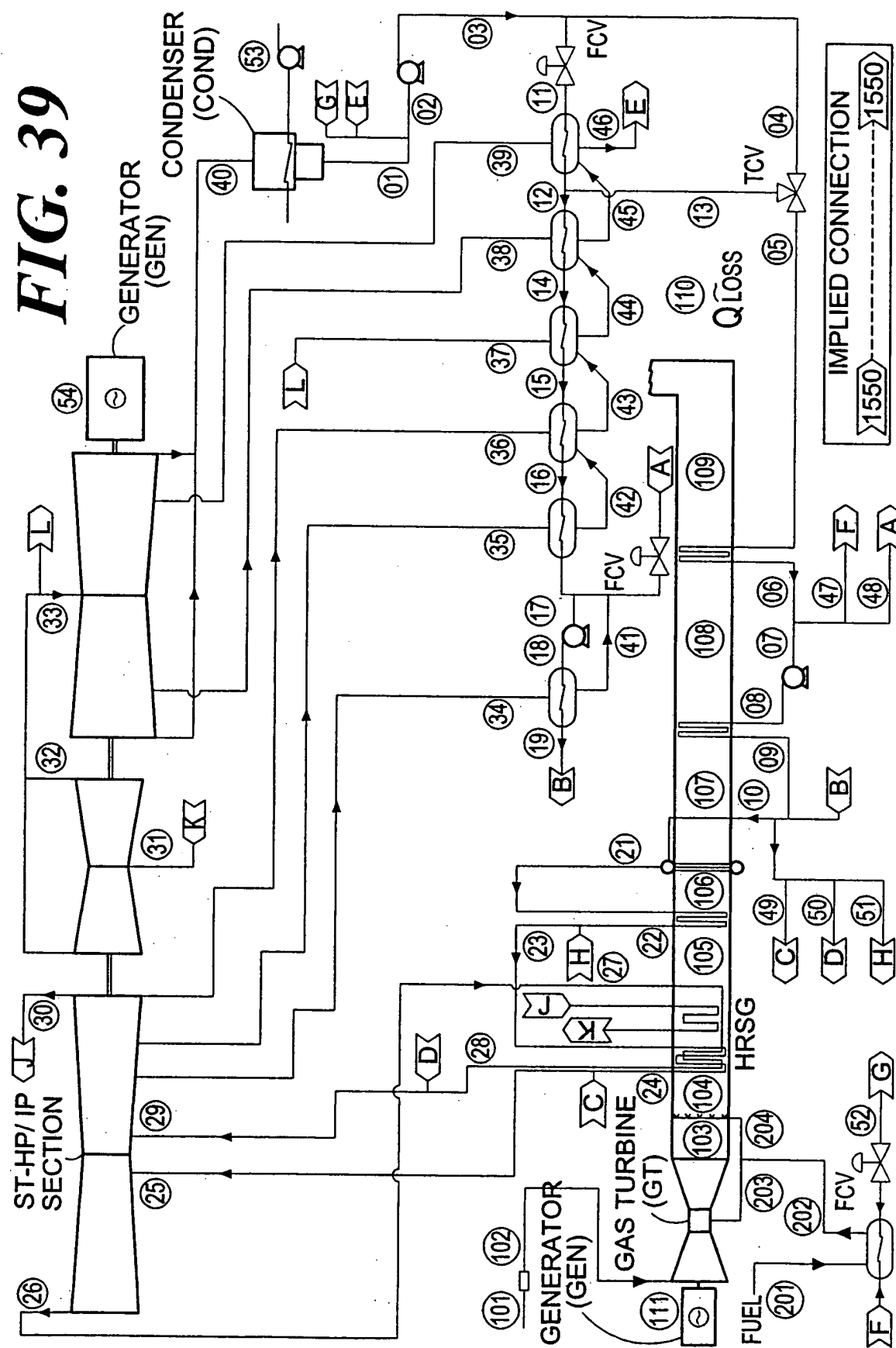


FIG 40

Exemplary Preferred Embodiment Heat Balance							
1040 MW Combined Cycle with 2 - GE Frame 7 GTs, Ultrasupercritical steam cycle							
Steam/Feedwater System							
Point	Pressure	Temp	Enthalpy	Flow	Heat Input	Power	Comments
	psia	Degrees F	BTU/lb	lb/hr	MMBTU/hr	kW	
1	0.59	84.66	52.689	2540732			
2	0.59	84.66	53.782	3153031			
3	450.00	86.21	55.450	3153031		-1541	Pump power, point 2 - 3
4	450.00	86.21	55.450	795099			
5	450.00	132.71	101.785	1775863			Preheat feedwater to dew point of exhaust gases
6	427.50	430.20	408.209	1775863			Exit Economizer 1
7	427.50	430.20	408.209	1775863			
8	4429.20	440.29	423.061	1775863		-7728	Pump power, point 7 - 8
9	4044.06	643.52	667.480	1775863			Exit Economizer 2
10	4044.06	607.00	616.610	3044712			
11	450.00	86.21	55.450	2357932			
12	450.00	170.32	139.348	1377168			Feedwater - Exit FWH 1
13	450.00	170.32	139.348	980764			To TCV
14	450.00	221.51	190.697	1377168			Feedwater - Exit FWH 2
15	450.00	297.81	268.179	1377168			Feedwater - Exit FWH 3
16	450.00	385.80	360.096	1377168			Feedwater - Exit FWH 4
17	427.50	442.21	421.528	1377168			Feedwater - Exit FWH 5
18	4429.20	455.32	439.161	1392731		-6061	Pump power, point 17 - 18
19	4429.20	496.09	483.714	1392731			Feedwater - Exit FWH 6
21	4044.06	736.63	894.294	3044712			Exit Evaporator
22	4044.06	766.46	1078.751	3044712			Exit Superheater Section 1
23	3851.48	752.42	1062.496	3155706			Enter Superheater Section 2
24	3851.48	1074.66	1466.947	3155706			Exit Superheater Section 2
25	3851.48	1070.00	1463.488	3168594			ST HP Section Inlet
26	1049.78	694.27	1318.409	3053493			ST HP Section Outlet
27	1049.78	694.27	1318.409	3053493			Enter Reheater Section 1
28	965.80	1112.00	1569.531	3053493			Exit Reheater Section 1
29	965.80	1112.00	1569.531	3053493			ST IP Section Inlet
30	218.46	698.72	1372.625	2923510			ST IP Section Outlet
31	200.98	1102.23	1583.042	2740311			ST RH2 Section Inlet
32	72.79	817.36	1439.510	2814556			ST RH2 Section Outlet

FIG 41

Exemplary Preferred Embodiment Heat Balance							
1040 MW Combined Cycle with 2 - GE Frame 7 GTs, Ultrasupercritical steam cycle							
Steam/Feedwater System							
Point	Pressure	Temp	Enthalpy	Flow	Heat Input	Power	Comments
	psia	Degrees F	BTU/lb	lb/hr	MMBTU/hr	kW	
33	66.97	816.90	1439.510	2740311			ST LP Section Inlet
34	611.58	986.16	1509.499	50957			1st Extraction Steam to # 7 Feedwater Heater, 5% Press Drop
35	370.65	843.53	1441.277	79026			2nd Extraction Steam to # 6 Feedwater Heater, 5% Press Drop
36	209.72	697.82	1372.625	108953			3rd Extraction Steam to # 5 Feedwater Heater, 5% Press Drop
37	69.88	817.13	1439.510	74245			4th Extraction Steam to # 4 Feedwater Heater, 5% Press Drop
38	19.46	452.21	1303.095	49520			5th Extraction Steam to # 3 Feedwater Heater, 5% Press Drop
39	6.76	395.80	1207.801	150060			6th Extraction Steam to # 2 Feedwater Heater, 5% Press Drop
40	0.59	84.66	1056.410	2540732			ST LP Section Outlet
41	611.58	452.21	432.802	166059			
42	370.65	395.80	370.713	79026			
43	209.72	307.81	278.021	187979			
44	69.88	231.51	199.957	262224			
45	19.46	180.32	148.348	311744			
46	6.76	96.21	64.235	461804			
47	427.50	430.20	408.227	150496			
48	427.50	430.20	408.227	0			
49	4044.06	607.00	616.610	12888			
50	4044.06	607.00	616.610	0			
51	4044.06	607.00	616.610	110994			
52	427.50	75.62	44.900	150496			
53						-1364	Pump power, cooling water
						-16694	Total Auxiliary Load
54						715154	ST Generator Output
						698460	Net Steam cycle power

FIG 42

Exemplary Preferred Embodiment Heat Balance							
1040 MW Combined Cycle with 2 - GE Frame 7 GTs, Ultrasupercritical steam cycle							
GT/HRSG System							
Point	Pressure	Temp	Enthalpy	Flow	Heat Input	Power	Comments
	psia	Degrees F	BTU/lb	lb/hr	MMBTU/hr	kW	
101	14.70	59.00		6910726			
102	14.59	59.00		6910726			
103	15.33	1123.00	412.64	7103452			
104	15.33	2465.24	865.01	7255946			
105	15.20	1363.91	500.48	7255946			
106	15.07	1095.41	422.30	7255946			
107	14.95	689.41	304.60	7255946			
108	14.82	472.67	244.17	7255946			
109	14.70	191.95	168.42	7255946			
110					-44.73		HRSG Heat Loss - 1%
111						341540	Net GT power

Fuel Gas System							
201	500.0	50.00	227.72	300992			
202	450.0	411.70	409.38	300992			
203	427.5	411.70	409.38	300992	3546.72		
204	45.0	411.70	409.38	152494	3643.97		

Totals	7190.69	1040000					
--------	---------	---------	--	--	--	--	--

Heat Rate, HHV	6914
Heat Rate, LHV	6229

FIG. 43

Exemplary Embodiment Load Transition

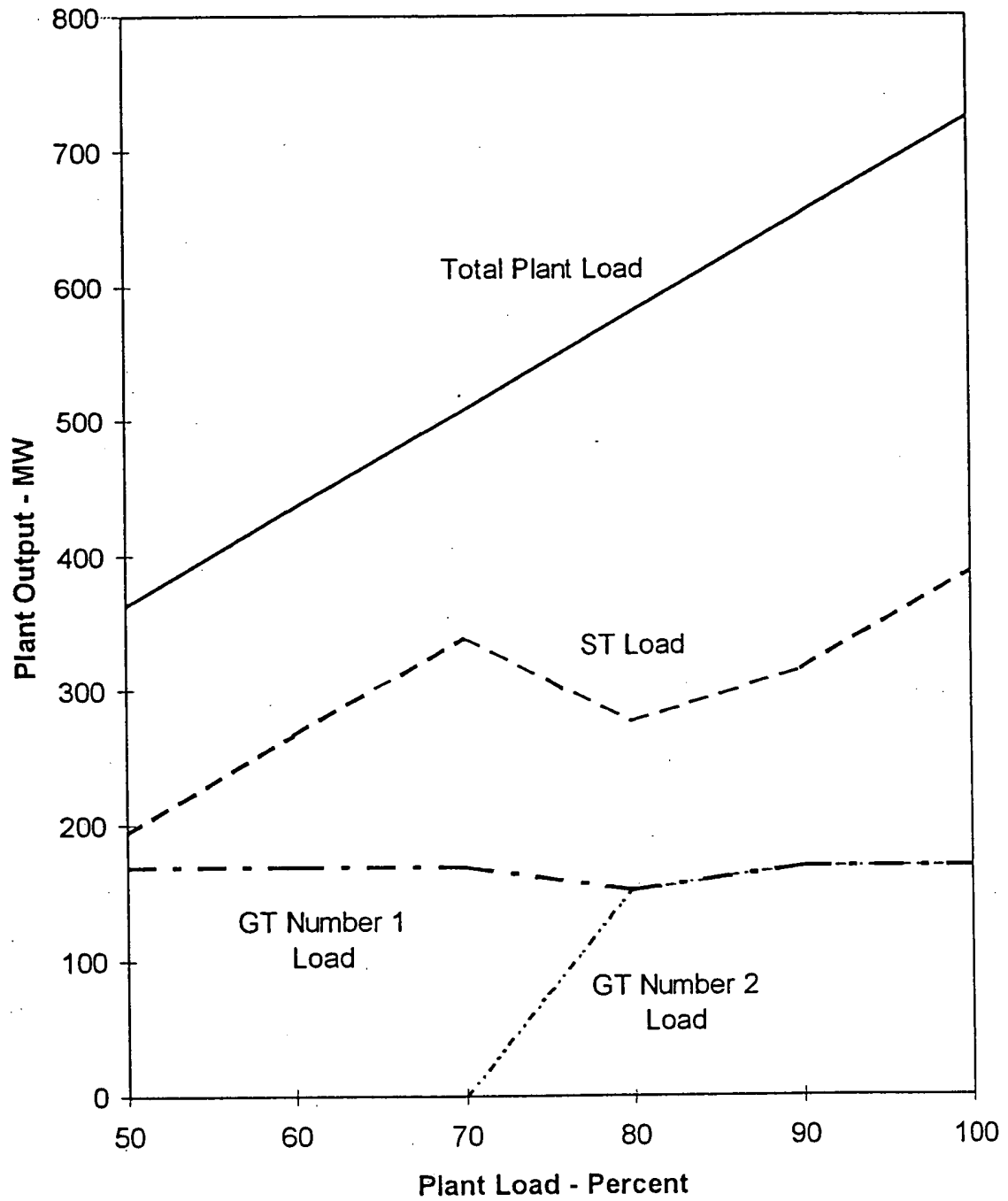


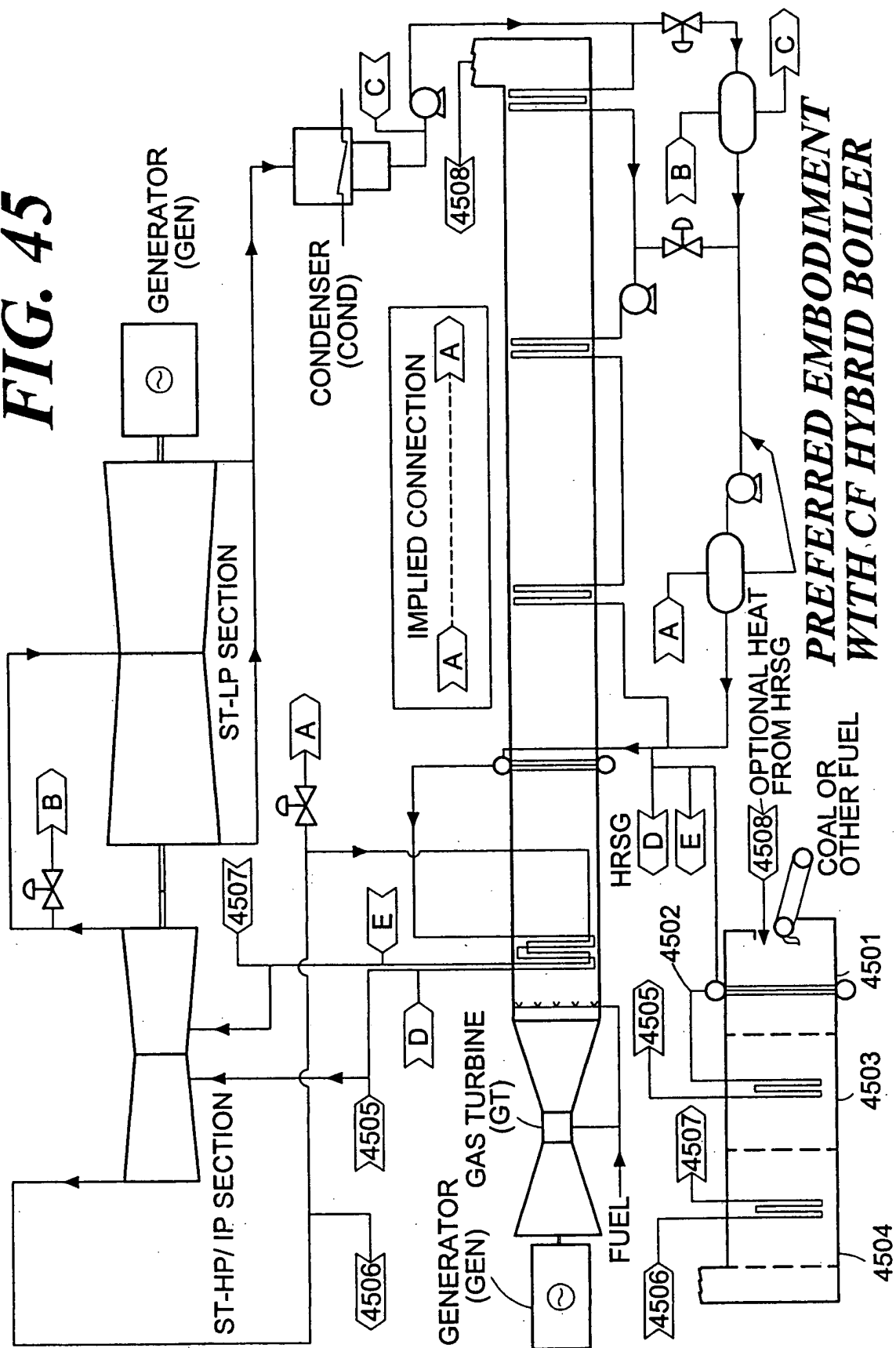
FIG. 44

Retrofit of Existing Steam Plants

Preferred Embodiment vs. Prior Art

Steam Turbine Section Flows													
Technology	Steam Inlet Press.	Steam Exhaust Press.	HP Section Inlet Flow	IP Section Inlet Flow	LP Section Inlet Flow	LP Section Exhaust Flow	Gas Turbine Power	Steam Turbine Power	Net Plant Power	Plant Heat Rate	Cost for Steam Turbine Modifications	Total Plant Cost	Plant Cost/ kW
	psia	inch HgA	k-lb/hr	k-lb/hr	k-lb/hr	k-lb/hr	MW	MW	MW	BTU/ kWh	MM US\$	MM US\$	\$/kWh
Conventional Steam Plant (pre-retrofit)	2415	1.20	2,354	2,209	1,815	1,587	0	409	400	7620	N/A	50	125
Prior Art - 1 GT	1815	1.20	439	511	528	528	169	97	263	6090	N/A	N/A	N/A
Prior Art - 3 GTs	1815	1.20	1,317	1,533	1,584	1,584	506	299	798	6040	10	240	301
Preferred Embodiment - 1 GT	2225	1.20	2,182	1,952	1,784	1,593	169	374	535	6235	0	110	206
Preferred Embodiment - 2 GTs	2100	1.36	2,046	1,946	1,900	1,824	338	394	725	6060	0	170	234

FIG. 45



**PREFERRED EMBODIMENT
WITH CF HYBRID BOILER**

[illegible]

PREFERRED EMBODIMENT HYBRID WITH NUCLEAR OR GEOTHERMAL

FIG. 47

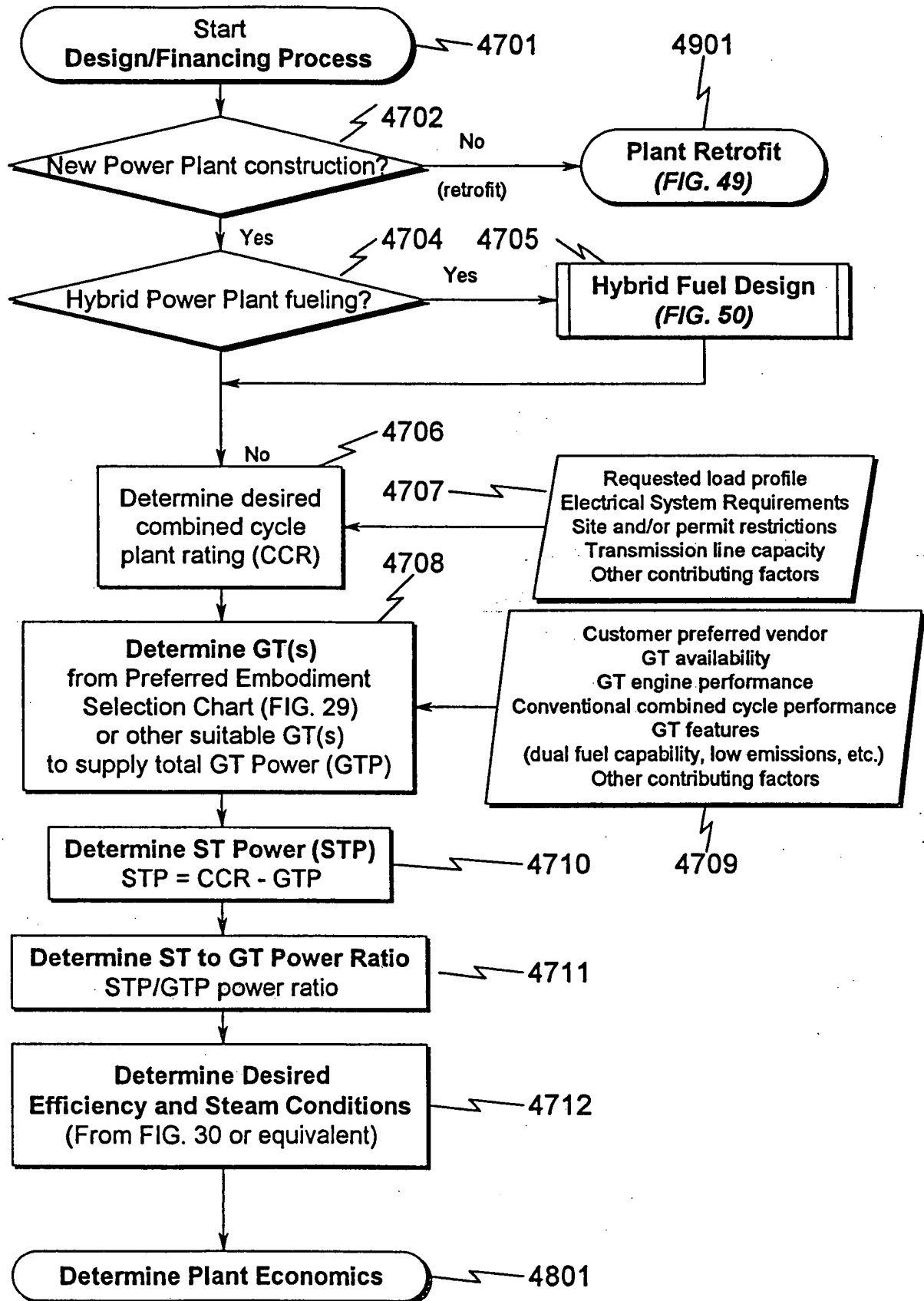


FIG. 48

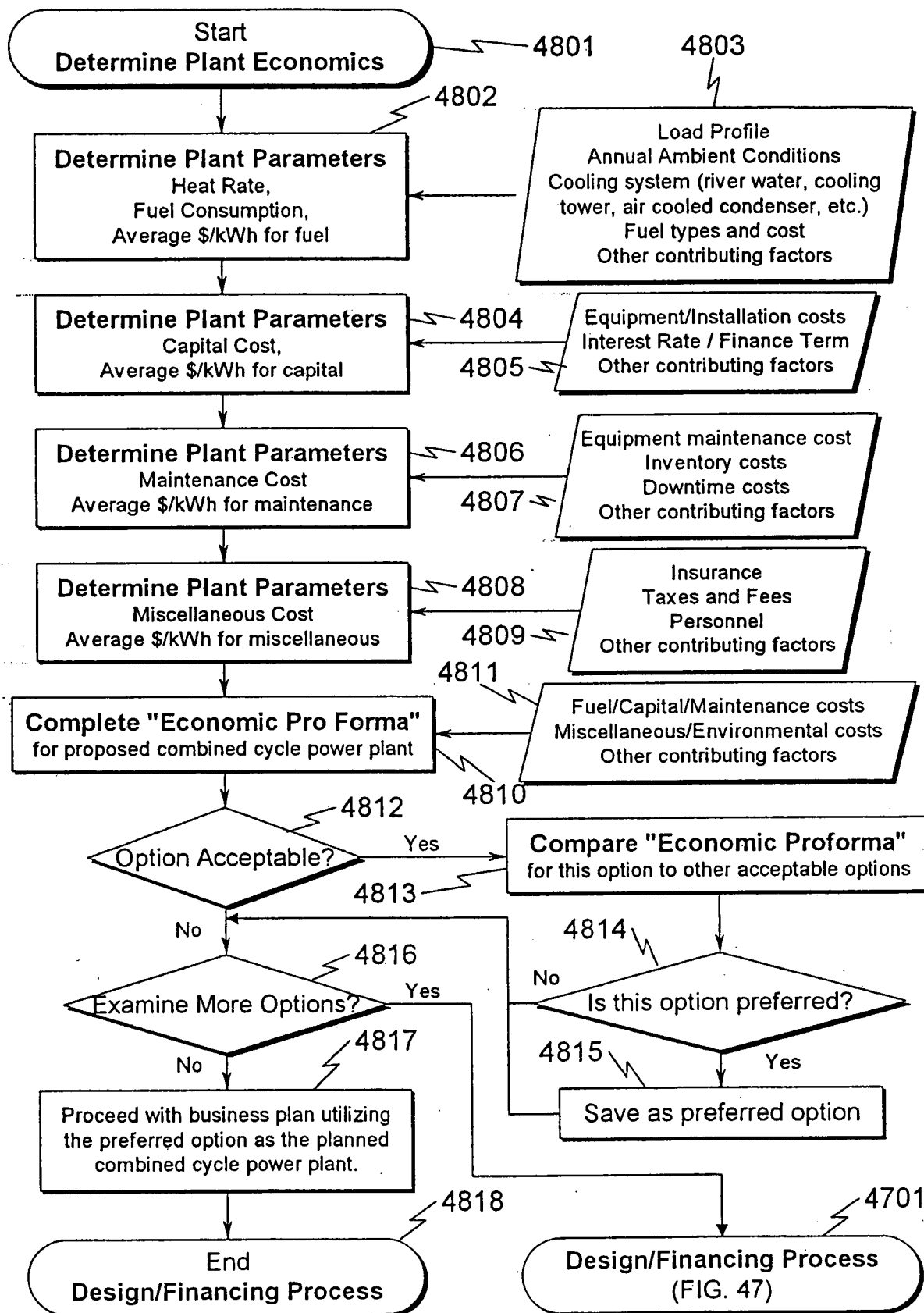


FIG. 49

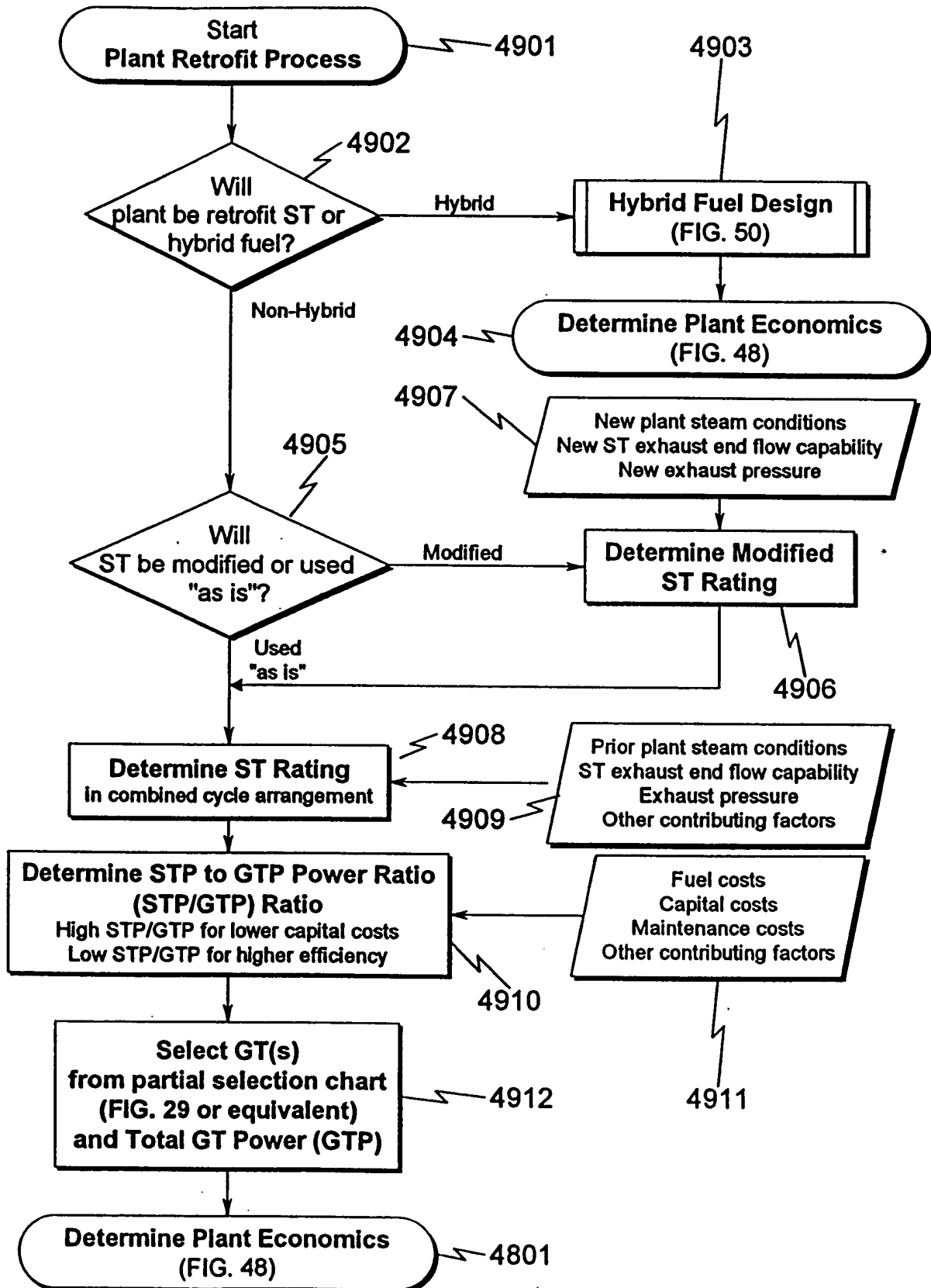


FIG. 50

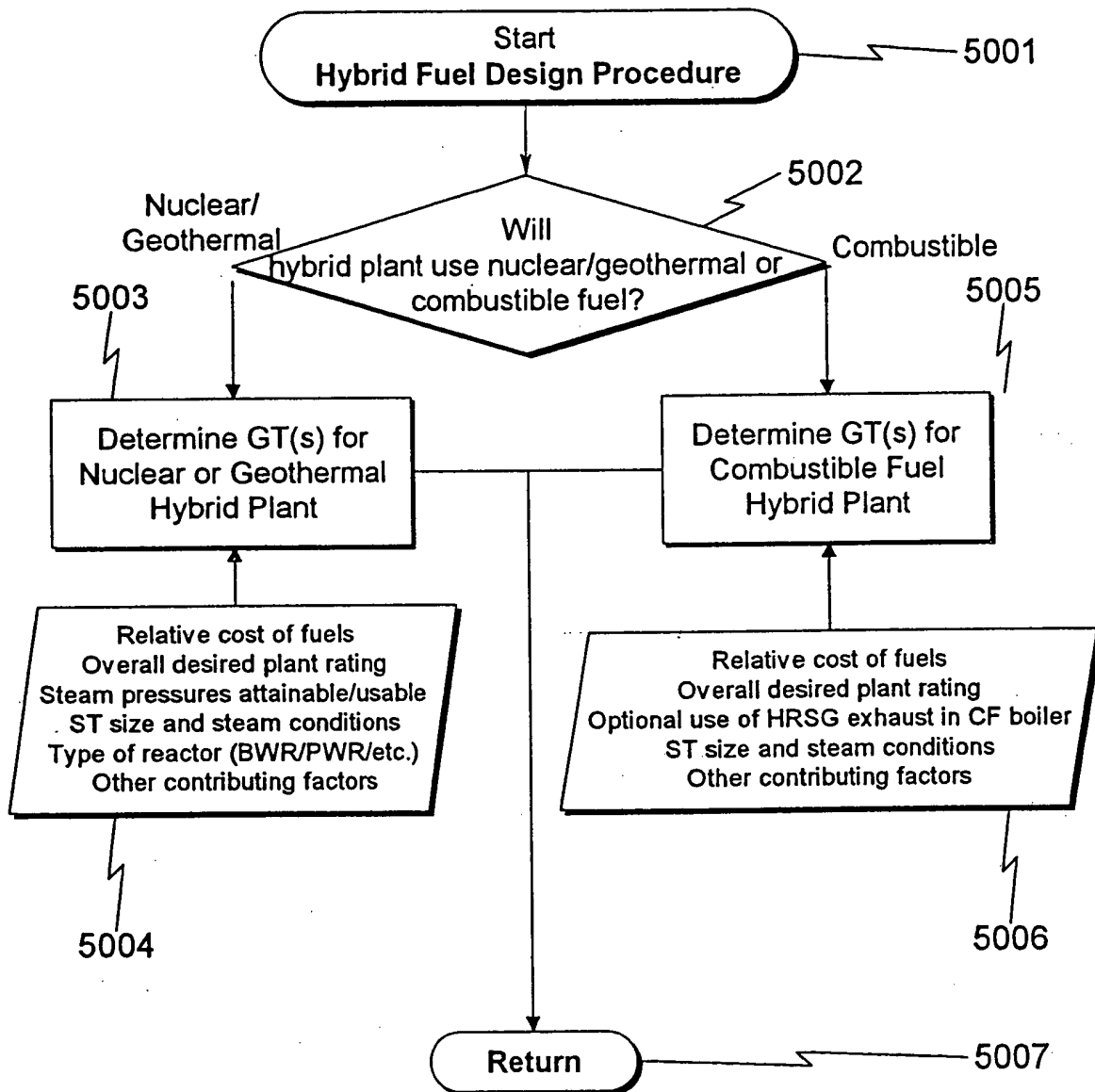


FIG. 51

EXEMPLARY THREE-CASING, FOUR-FLOW STEAM TURBINE (GE)

